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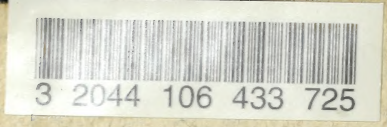
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The American Botanist

Devoted to Economic and Ecological Botany.

EDITED BY WILLARD N. CLUTE.

Volume I.

BINGHAMTON, N. Y.
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FOR THE PLANT LOVER

JULY, 1901

BINGHAMTON, N. Y.
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THE AMERICAN BOTANIST

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BALDER'S BROW.

By C. F. SAUNDERS.

One of the most familiar of weeds is a certain little plant with bushy, finely dissected foliage, which we have all seen on urban commons and vacant lots where the grass is kept close cropped by goats and goslings. In the country its favorite haunt is back of the barn and in the lane, though sometimes, too, we find it out front by the road in the congenial company of such democratic herbs as pigweed, ragweed and milkweed. Late in June it begins to display its pretty flowers which are exact duplicates of the ox-eye daisy, except that they are not so large as the latter.

All through the summer these daisy-like blossoms may be seen cheerfully nodding to simple souls that find pleasure in quiet, everyday beauty; but should you be tempted to gather a bunch of the flowers, you will find the plant has so unpleasant and weedy an odor that you will probably throw your posy away in disgust. This rank smell is a characteristic which gives a key to one of its common names, to wit, the fetid chamomile *(Anthemis cotula)*. It is indeed a poor relation of that bitter chamomile which is so important an item in the winter supply of medicinal herbs wherewith old-fashioned country housewives still hang the garret rafters.

Common as it is on Uncle Sam's farm, the plant is by no means an aboriginal American, but an immigrant within a couple of hundred years from Europe. Like many another weed that we pass by daily without a thought, it has brought with it a memory that invests it with an atmosphere of romance; for in

its old home in northern Europe it was associated with the gods and known as Balder's Brow. Balder, best beloved in the Norse Valhalla, and a sort of Scandinavian counterpart of Apollo, the sun god, was fabled to be of a presence so bright and beautiful that wherever he went he shed light around him. Not unnaturally, therefore, our little flower, with its golden yellow head and aureole of white rays like conventionalized sunbeams, was to the popular mind of the frigid North, emblematic of the favorite deity at whose coming cold and darkness fled and summer reigned in the earth. This fancy was preserved in the name that the people gave the flower, and to this day, it is said, the name is current in Sweden and in some rural districts of Northern England, though in the latter country the word has become curiously corrupted into Baldeyebrow.

So by the mouth of a wayside weed would the ancient spirit of skald and viking speak to the twentieth century American and lift him a little, if may be, out of the fever and hurry of a too sordid life into the immaterial realm of fancy.

Philadelphia, Pa.

DEVASTATION OF NATURE.

By G. Armington Sayre.

A fundamental principle in the higher education of botanists is embodied in the simple lines—"To love the flower and leave it on its stalk." To do this requires more heroism than the majority of collectors possess. Whether they ever make the effort to thus grow in grace depends upon the motive for collecting and the amount of inborn avarice in the individual.

Legitimate collectors of ferns and wild flowers may be classed under three heads: Commercial, scientific and cultural. The commercial collector sees possible dollars and cents in each plant of any rare species he may chance to find, but if he is a discreet man he will realize that it will be years before the plants, just starting, will again replenish his pockets. Financial consider-

ations naturally outweigh aesthetic value, although he may, or may not, have an appreciation of the beauty of his stock in trade. The collection and sale of living plants or herbarium specimens is a perfectly legitimate business; but there is no excuse for devastating Nature's choice retreats or of exterminating her best works of art for greed of gain.

On the other hand the scientist argues that anything sacrificed in behalf of science is praiseworthy. To be able to add facts to a known science requires the wholesale slaughter of much innocent beauty. Anatomical peculiarities can only be discovered by dissection and rigid investigation of many specimens; hence extinction of a species often follows in the wake of the *friend* (?) of the cause.

The culturist is more likely to have a keener appreciation of the real beauty of the ferns and wildings than collectors of either of the other two classes; for with him aesthetic value has not given place to sordid considerations. He not only loves the ferns and wild flowers, but appreciates them from an artistic standpoint; he wishes to make them grow where they can be seen and enjoyed with less trouble than in their native haunts. He also must have a surplus of material to draw from, for only certain forms and stages of growth will fit into the various places he wishes to fill. All of this may be done with careful selection.

But alas! the gospel of *moderation* is everywhere in order, and a plea that Nature's sylvan dells be not roughly dealt with, and that this sort of vandalism be checked before her choicest treasures are exterminated. Granted that nobody *owns* the wild things growing, and that nobody can "stake a claim," yet the smallest soul among us should feel conscience smitten for laying greedy fingers on pictured walls too exquisite to touch even for a laudable purpose. "I shall never pass this way again, and no one else is likely to follow in my footsteps; for no one else cares for these things as I do," is a common excuse for making a clean sweep of a rare "find." Others say to themselves, "If I do not take it somebody else will," and the beautiful growth

which Nature has taken years to perfect is ruthlessly torn up. We all "know a bank where the wild thyme blows," and if we are discreet we will keep our knowledge to ourselves, though it seems hard not to invite a trusted and congenial friend to share the feast of fat things which we feel sure the gods have spread for our especial pleasure in some secluded nook. But the vandal is in our midst and no one knows in what guise he may appear, therefore we had best be wary.

One of my lady friends who is discretion itself in these matters, ventured to take a missionary, whom she was entertaining, to see the view from one of her favorite resorts. The aforesaid lady missionary was a wandering planet, with no scientific taste in evidence, no home to decorate or friends to bestow botanical gifts upon. Nobody dreamed that her eyes would alight upon a rare growth jealously guarded by my friend; but her hands were with difficulty restrained from pulling it all up. Soon after, as she moved on to other entertainers, she revealed the secret and personally headed an expedition to the place, which ended in exterminating the species from that locality. This form of looting may not be punishable according to civilized codes, but if cannibals *should* eat her on her return to heathen lands—they might do worse.

Notwithstanding the advice of an ancient dame, viz: "When yew're gittin', git a plenty," an injunction should be placed on irresponsible parties who wantonly tear up plants simply because they are pretty, only to throw them aside as soon as they begin to fade. A genuine devotee of nature is sure to have a wild-garden away from the "madding crowd" where the higher delights of the spirit may be cultivated. Gibson had his orchid retreat; Thoreau his checkerberry patch; while lesser lights, with varying tastes, find consolation in other wild flowers and ferns. Placard your wild garden if you like, but find mine if you can.

SOME PHASES OF PLANT DISTRIBUTION.

By Willard N. Clute.

There seems to be no accounting for the way in which some plants are distributed over certain sections of country. Who is there who cannot recall some long and careful search for a plant which ought to grow in his own locality, but which must always be set down among the missing, although common enough just over the border in the territory of a rival. No matter how well stocked with botanical rarities one's own collecting grounds may be, it is always exasperating to reflect that some common weed has not been found, especially if he knows of spots in which every condition for its growth seems favorable. The situation is aggravated if the adjoining territory holds some particularly active botanist who thoroughly enjoys sending you rare specimens from his own region with a tantalizing note suggesting that your collecting ground is not of much account if it cannot match his own in the matter of that particular plant.

One gains a temporary satisfaction when he manages to ferret out specimens of the same plant from his own region, or better still, finds something new with which to give his friend "a Roland for his Oliver," but so long as his own section is not credited with all the common species that, according to the botanical manuals, should be there, he is not likely to rest satisfied.

There are several of these plants missing from my own locality that I am sure would have been reported long ago if this merely depended upon careful searching to bring it about. One of these is the wild indigo *(Baptisia tinctoria)* so common in the sandy soil of Long Island, New Jersey and parts of New England, not to mention localities further south and west. We seem to be well within the limits of its range, but not a plant is to be found. And yet, we barely miss it, for in journeying hither from New York, we constantly see its great globular tufts of green in dryish places as the train toils up the Delaware valley, and it is not until the final spurt is made over the summit and down into the Susquehanna valley that *Baptisia* drops out of the race. Not ten miles beyond our region it grows, and Dr. C. F.

Millspaugh even found a few specimens upon our side of the divide, but none have been found since. We live in hopes that the clan may yet get up courage enough to span the few miles that still separate us.

A characteristic species of the Delaware valley unaccountably absent from our region is the red or river birch *(Betula nigra)*. It is scarcely possible that it could have been overlooked with us, for the tree, especially in winter and spring, is so easily distinguished from its companions on the river banks that it can be identified with certainty from long distances. It is common again in the Susquehanna valley in Pennsylvania, but apparently does not cross the line into New York. Why it does not is a mystery.

A companion of the wild indigo, the partridge pea *(Cassia chamaecrista)* is another species that we would gladly welcome to a place in the Upper Susquehanna Flora. Like all other species that become too common, this is in many sections considered a weed to be classed with the poke, Jimson weed, rag-weed and toad-flax, but in my own opinion the sections in which the roadsides are bordered with the pretty pinnate leaves and bright yellow flowers of this species are to be congratulated. I never tire of the sight of its golden flowers, and could connive at spreading such a "weed" with good grace.

Two related species, the wild senna *(C. Marilandica)* and the wild, sensitive plant *(C. nictitans)* find a home with us, but the partridge pea holds itself aloof. That it will grow and thrive here is proved by the fine specimens that at present are growing in my garden from seed gathered on Staten Island late in the autumn of last year. Although *Cassia nictitans* is called the sensitive plant, the leaves of the partridge pea also respond promptly to stimuli. They close at a touch, though so slowly that the eye does not perceive the motion. The sensitiveness to the contact of foreign bodies seems to vary with the day. After being whipped about by the wind for some time it is much less sensitive.

I find a similar state of affairs to exist in the true sensitive plant *(Mimosa pudica)* of the Tropics. The leaves of this plant droop and close instantly upon being touched, appearing to melt down like snow before a fire. Pressing the plant for the herbarium is a difficult matter on this account. By the time one has broken off a branch, every leaf has closed. After carrying my specimens for some distance, however, I was surprised to find that they were becoming resigned to the situation and again opening their leaves. Putting them in the press gave them a new and different shock and they "melted" again before the straps on the press could be tightened.

Our roadsides, river banks and old fields are strewn thick with the common evening primrose *(Oenothera biennis)*, but we search in vain for specimens of its daylight counterpart, the sundrops *(O. fruticosa)*, which the Manuals persist in calling common. It is not unknown in southern New York, but in my immediate vicinity it is entirely absent. One must see the two species blooming together to realize how superior to the evening primroses are to those which flower by day.

Until last year we had been looking for the dwarf sumac *(Rhus copallina)* without success. "Rocky hills," says Gray's Manual, indicating its habitat, but here, where rocky hills are at a discount, it is exceedingly rare. It may be noted that it does not appear to be restricted to rocky places, for it grows abundantly in the sandy soil of Long Island. In any event, it is rare with us. I know of only one clump in a territory of more than five hundred square miles.

The list of species which it would seem ought to be plentiful in the Susquehanna valley, but which are not, is a long one, and includes such common plants of other localities as the whitlow-grass (*Draba verna*) rock rose (*Helianthemum canadense*), the pinweeds (*Lechea*), of which not a specimen is to be found in certain counties ; the *Arethusa* and the painted cup (*Castilleia coccinea*). The whole area drained by the Upper Susquehanna has been sufficiently explored to assure us that these plants are

nowhere common. Whether in the changes of the plant covering they will ever become so, remains to be seen.

GARDENING IN INDIA.

The gardeners of the North Temperate Zone, who, tiring of battling with such small game as aphide, snails and moles, long for a more adventurous life, might try their craft in India. The gardener's life there is anything but monotonous, as the following from *Indian Gardening and Planting* shows:

In India, gardening is carried on under difficulties such as seldom present themselves in Europe. One of the charms of an English garden is that one can seat himself on a bit of grass without the fear of death haunting him; for there are no snakes and other venomous vermin to disturb his peace of mind. Out here it is different, for one can scarcely turn over a stone in the garden without finding some crawling thing beneath it.

The authorities of the Royal Botanic Gardens, Calcutta, have to contend against various wild beasts. In 1879 the Curator of the Garden was mauled by a tiger, which had found its way into the garden. Jackals are permanent residents in the garden. They devoured a goat quite recently, and were it not that the swans and geese are carefully guarded, there would not be much left of them. Turtles infest the ponds and lakes, and are destructive creatures, eating up any choice aquatic that may be planted out. They have a peculiar weakness for young *Victoria regia* plants, and it is for this reason that this queen of water lilies cannot be grown in these gardens. The latest addition to the carnivora of the gardens is in the shape of crocodiles, for which the recent floods are probably responsible. One of these saurians, which had taken up its permanent quarters in one of the lakes in the gardens, was shot a few days ago by Mr. N. Gill, the Assistant Curator of the gardens, who intends to preserve the specimen. Snakes, scorpions, centipedes, huge red ants, venomous caterpillars, and insect pests of all sorts are, like the poor,

always with us. In the mofussil, matters assume a more serious aspect. Porcupines are frequent visitors, and do a lot of damage. Wild boars are even more destructive, for they have a fondness for roots, and beds of carrots, turnips, etc., are much sought for. We remember a wild boar hunt in the "Ram Newas" public gardens at Jeypore, in Rajputana, when a "sounder" of six tore through a galvanized wire fence and caused havoc in the gardens. Four of the visitors were accounted for. Leopards used to destroy the animals in the deer park in the same gardens, and it was not until after many nights of sitting up that the marauders were accounted for. It was not an uncommon experience for the Superintendent to find a pair of leopards promenading round his dwelling house in the gardens. He always slept with a loaded rifle by his bedside. Perhaps the most destructive pest that the Indian gardener has to contend against is the white ant. Nothing is safe from this termite. Wood, whether living or dead, is attacked. Even iron work is not safe from its attacks. Other wild beasts, in the shape of wolves and hyenas, are not unfrequent visitors. Field rats are also a scourge, and when a swarm of locusts descends on a garden, scarcely a leaf is left. These are some of the "diversions" that vary the monotony of the Indian gardener's life.

THE OPENING OF A FLOWER.

It was late in an afternoon of August that I sauntered into my garden, having a little season of leisure to spend there. The buds of the Four-o'clock or Marvel of Peru had just begun to unroll. Why not watch the unfurling of a flower, which was to spend its odors on the night and shrivel with to-morrow's sun? The common things are those which few people see, nor care or think to see. To the true observer there is nothing great and nothing small, for all things are alike marvelous and noteworthy; nothing is commonplace, all is miracle. So I sat in the garden-path before the lusty Four-o'clock bush, with its hundred blossom-buds, singling out one for special eyeing.

Watching the bud carefully I felt rather than saw that it was slowly, very slowly unrolling before my eyes. To behold such a phenomenon one may see sharpest where he looks askance, as he would look at a chimney where the smoke was so attenuated that he knew not whether what he saw was smoke, or only his wish to see smoke; or as he would look ahead for approaching objects when driving in a dark night,—not by straining the eyes, but giving them the local rein to dilate to their full.

So this swelling and uncurling of the flower was more like the work of the imagination than something which the eyes noted. At times a movement was visible, when a fold that had been held, leapt, on being freed, or a stamen curled suddenly on its long filament. Gradually, slowly, how slowly, the trumpet opened; and ere too wide, as if in wisdom, it prepared for fertilization in good time against any chance honey-hunter. The anthers perched upon the tips of the slender filaments went through an exquisite blossoming act of their own —five little flowers within a flower, I might say. They formed the most charming part of the whole dainty exhibition. At first each of these anthers was like a pair of tiniest buns that had been baked together back to back in the same pan. They were nicely balanced on the end of the gracefully upcurved filaments. Soon, along the line marking the lid that fitted in the top of each of these biscuit-like anthers, a crack appeared; wider and wider it grew, higher and higher rose the lid, till it stood on end, and back to back with the lid of its little twin, which had risen with a rhythm to match its own. Then the under sides, which proved only nether lids, moved downward, downward till they were reflexed against the filament. Within these upper and lower lids little masses of golden pollen were disclosed on their little stalks. Five little anthers were all hatching at once.

And then, the flower was slowly pumped fuller and fuller of juices, becoming a more perfect trumpet every second, until it stood a finished blossom in the deepening twilight. The last rose-draperies hung as the flimsiest filament of mist high in

heaven, the trailing garments of departed day, where in the deep blue sky the lamp of the evening star, already gleaming seemed but a benedictive closing of the scene, while that sweet penetrating odor, which drifts so far on the humid night air, published the readiness of the Marvel-of-Peru to receive its anticipated hawk-moth callers,—its patrons really,—exchanging a drink of nectar for a little help in the way of a few grains of pollen smeared on the stigma of the pistil that seed might mature.—*Ernest Waters Vickers in Popular Science News.*

FLOWERING OF THE BAMBOO.

The bamboos are the largest of the grasses, but unlike our common grasses, very rarely flower. When flowering does occur it is something of an event, as may be seen from the following account from the *Indian Forester :*

A somewhat remarkable event is taking place in the Chanda district of the Central Provinces, and that is the flowering on a large scale of the ordinary bamboo *(Dendrocalaemus strictus)*. The area over which the flowering extends is estimated at 1,200 square miles, and in this area, although a few clumps here and there have escaped, the phenomenon is universal. But the extraordinary point about it is that clumps of all ages are flowering —not only mature clumps, but quite slender seedlings of six or seven years' growth, or even less. I send you some specimens to illustrate this; the rhizomes show that those clumps are quite young. Last year the droughts affected the bamboos in the Dhaba Range of this district, and the bamboo flowered over a small area, and produced a kind of manna. Many thousands of people were kept alive for some weeks on the seed. This year the area is infinitely larger, and the whole population will, in course of time, flock to the forests to gather the seed.

The consequences to the people in the vicinity of this flowering and subsequent death of the bamboo will be rather serious, as for many years to come, they will not be able to find sufficient stores to satisfy the numerous wants of the agricultural popula-

tion to the north and west of Chanda—at any rate, the price of bamboos will be very much higher. The Government revenue which now amounts to about Rs, 20,000 from this source, will also suffer, as when the dead bamboos have been utilized, there will be no more available for some fifteen years or so. It would be interesting to ascertain whether such a universal flowering of this particular species has been recorded before. Needless to say, the oldest inhabitant has no recollection of such an event, and the flowering of the smallest clumps is believed to be unique. It is probable that in this district at least, the bamboo does flower gregariously over fairly large areas, as three of the eldest inhabitants informed me that they had seen the bamboo flower twice: first, when they were about ten years old. Their ages were probably quite seventy. Hence it is not unlikely that his bamboo flowers at intervals of about thirty years.

NOTE AND COMMENT.

Short articles and notes on anything of interest relating to plants are solicited from our readers for this department. Make a note of your interesting experiences and afford others pleasure.

A Hardy California Flower.—The California Poppy *(Escholtzia)* endured the severe winter of 1900-1 in southern New York and came up in many places from self-sown seed. The bright, yellow poppy-like flowers make a very pretty show. Those who would add a new feature to the landscape, might encourage this flower to become a "weed."

The Potato Bug and the Nightshade.—It is said that until the potato begun to be cultivated as far west as Colorado, the bugs did not trouble them, being content to eat the native species of night-shade *(Solanum)*. Many of these latter have prickly leaves, and the smooth-leaved potato must have appeared much like pie to bugs used to spines and thorns. That this diet agrees with them seems proven by the way they have since thrived.

The Prickly Pear.—The Ohio species of cactus, *Opuntia humifusa*, has an interesting habit which seems to be a protective measure against cold. At the approach of winter the flattened stems lose their upright position and press themselves closely to the surface of the ground. The stems lose considerable of their moisture at the same time, becoming wrinkled, but not flaccid. By the end of April they are again upright and distended.—*Ohio Naturalist.*

Plants of the High Andes.—At a meeting of the Linnaean Society of London, on April 4th, a paper was read by Messrs. W. B. Hemsley, F. L. S., and H. H. Pearson, F. L. S., on a small collection of dried plants made by Sir Martin Conway in the Bolivian Andes in 1898-99. This collection contained but forty-six species, but these were of special interest from the great height at which they were found, *i. e.* between 18,000 feet and 18,700 feet above sea-level. The highest Andine plants on record were stated to be *Malvastrum flabellatum*, Wedd (one of the mallows) and a grass, *Deyeuxia glacialis, Wedd.—Gardening World.*

Strange Partnerships.—If we look closely into Nature we find many strange partnerships. Perhaps the strangest and most interesting of all is that of plants living in partnership with insects for their mutual welfare. The plant is a Mexican tree, *Acacia sphaerocephala*, and its partner, a pugnacious species of ant. The branches are armed with singular double thorns, from which feature it is known as the Bull's Horn Acacia. These thorns are very hard but hollow. At the base there is a soft spot which is easily pushed in and makes a passage into the hollow of the thorns. It is in these hollows that the ants live with their heads filling up the holes. When an insect attempts to climb past one of these the ant rushes out and destroys it, but does not, as might be supposed, live on its prey. Its food is provided by the plant in the form of little grain-like growths at the tips of the pinnae, so that by this partnership the ants protect the plant in return for food and shelter.

EDITORIAL.

Within the past few years the study of nature in America has received a wonderful impetus. Twenty-five years ago books upon natural history were exceedingly few, and the standard works were mostly by British authors. The increased interest in the subject, however, has brought about a great change, and the book-sellers' shelves are now loaded with books by American authors on plants, birds, bugs and mammals, while the press is full of announcements of forthcoming volumes upon the same and kindred subjects. We are becoming an out-door people, and the rise of such pastimes as wheeling, golfing, camping and tramping, has not only made it fashionable to know something about the marvellous forms of creation that meet us on every hand, but has also considerably increased that body of students who, fashionable or not, will continue to be interested in the ways of plants and animals. To supply information about plants and to supply it in language that the general reader can understand, is the province of THE AMERICAN BOTANIST.

In order to insure accuracy in botanical literature, it is necessary to use the scientific names, but in all cases where there are common names for the plants mentioned in this journal, such names will be given also, thus making the contents available to the flower-lover as well as to the strict scientist. Articles and notes suited to our needs are solicited from all into whose hands this number comes.

It is not necessary to be a prominent scientist to write an article that will interest the flower-lover. Very frequently the prominent scientist is the poorest person that could be chosen for such a task, for he usually gets so deep into some specialty as to lose all sense of what might be called botanical perspective. The things that would interest us, he passes by as too trivial to waste time upon. As an indication of what is wanted for this journal, may be mentioned records of the increase or decrease of

any species, of the finding of rare species, the effect of environment upon plants, the uses made of our native species, the names by which they are known to farmers and "herb-doctors," and the meaning of such names, experiments in cultivating and propagating our plants—in short, we want articles upon any subject connected with the recently recognized science of plant-ecology.

To people accustomed to the trend of modern botanical studies, the title we have selected for our journal might at first seem a misnomer. Judged by present standards, a botanist might be defined as a gentleman engaged in wrangling with his fellows about obscure points of nomenclature or counting hairs and scales in desperate attempts to make two species out of one. Turning to the dictionary, however, we find that a botanist is "one versed in the knowledge of plants." That is exactly what this magazine aims to be, and we invite all who are interested in such subjects as the color and fragance of flowers, the uses and folk-lore of plants, and the curious facts in the behavior of any species to become subscribers. The magazine will always be edited with an eye to their interests.

It may be questioned whether any journal devoted to popular botany can secure enough original matter of the proper kind to fill twelve numbers yearly. It is the common experience that every magazine we take up contains certain articles of interest, interspersed among many that are too technical for any but a limited number of specialists. While we shall use original matter for the bulk of The American Botanist, we shall also make a feature of re-publishing everything of a popular nature appearing in other botanical journals, thus forming a sort of botanical review and enabling our readers to get a survey of the whole botanical press by subscribing to a single journal.

Having issued what we believe to be an interesting number, and promising that succeeding numbers will be even better, we

rest in the confidence that lovers of plants will show their appreciation of the enterprise by subscribing. We have been especially gratified by the large number of cash subscriptions received in response to a circular recently sent out, although this circular did not ask for a remittance until copies of the magazine had been received and examined. It is also a pleasure to note the fact that many who received our circular sent us the names of others who they thought might be interested, and so helped to spread a knowledge of the journal. If any receive this number and do not care to subscribe, they will do more than one a favor by handing it or mailing it to some flower-loving friend. All are requested to send us the names of friends who they think would be interested in receiving a sample copy.

Twice before in the history of botanical literature an "American Botanist" has been issued by others. Without being at all superstitious, we still look forward to the "charm" that is always said to accompany the third attempt. The magazine will be sixteen pages in size until a thousand subscribers are secured. After that, four pages will be added for every two hundred subscribers gained. Every subscription counts toward a larger journal. Shall we be favored with yours?

BOOKS AND WRITERS.

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FOR THE PLANT LOVER

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THE AMERICAN BOTANIST

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THE WOODSTOWN LILIES.

BY EDWIN C. JELLETT.

Perhaps one of the most beautiful—certainly one of the most striking of our native plants—is the American Nelumbo (*N. lutea*), locally known to plant lovers as the Woodstown lily. About this time of the year, one living in Eastern Pennsylvania or in Western New Jersey, is apt to see an announcement that the rare Woodstown lilies are preparing to bloom, or else may read that a party of enthusiastic botanists, upon a day's outing, has appeared at Woodstown to collect the rarest of American wild flowers, as it is believed by many that the Woodstown mill-dam is the only spot where the plant is to be found. Indeed if a reporter who is anxious to fill his paper with an account of something new and strange, does exaggerate a little, and if on seeing the notice, an eager flower gatherer, without consulting his book, starts at once for the home of the wonder rare, bent on securing a few of its blooms before it be too late, I shall not blame; for independent of the lilies and the mystery of their location, the "Woodstown mill-dam" is a most inviting place, and the country about it is a paradise for botanical students and collectors.

Picture a beautiful pond, and at one corner of it an old-fashioned mill, with near-by, a high stone breast, over which the water surges until it rises in spray from a rocky pool below, while above, a line of weeping-willow trees almost hides the falls and the mill from view. Where the water narrows a single-span wood bridge crosses, from which one may follow the whitened waters tumbling down the ravine until lost to sight, or turning, may, at the far away end of the upper dam, see an interminable number

of sulphur-yellow globular flowers, plentifully surrounded throughout by upright leaves, standing, sentinel-like, high out of the water, as though they knew why they were there. An occasional seed-rod, conical and immature, showing its head, appears as an uneasy intruder, while underneath, large, smooth, green, depressed leaves, cover the surface of the water so completely that not until the outer line of vegetation is reached does the water become visible.

This is the Woodstown mill-dam, "where lilies blow," and the smallest boy who dabbles in its waters is proud of it. The gentle murmur of falling waters follow us, and above, from pine top to pine top, kingfishers cross and recross the lake, ever on the alert for prey. Ceaselessly they chatter as they race, and in marked contrast with the more peaceful wrens and swallows, who keep close to the lower eaves of the old mill, making so little noise that their presence might never be suspected.

It is a rare treat to see the Woodstown lilies at their best, and while the plant is plentiful at several points not many miles distant, the knowledge lessens our interest not a whit, for let the oldest inhabitant of Woodstown believe he has the "only pond of lotus lilies in the United States," and that the aggregation of plants there, was started by "seed brought down by the wild ducks from Canada." The possession may be all in all to him, but we know that the beauty so lavishly bestowed at Woodstown is elsewhere, and elsewhere must be as beautiful, and bright, and as free as the sun, which everywhere gives to beauty both light and life.

Germantown, Pa.

A PLANT IMMIGRANT.

By Willard N. Clute.

One of the redeeming features of rubbish heaps, ballast grounds and waste lands is that they furnish a lurking place for numerous wanderers and outcasts of the vegetable kingdom.

Many of these have long ago ceased their travels and have become squatters on every available inch of soil, as the jimson-weed and Jerusalem oak (*Chenopodium botrys*), while others like the human tramp appear in one place to-day and another to-morrow, ever restlessly wandering over the face of the earth. Now and then, among these traveling species, one chances upon a plant of better estate, just as an occasional honest working-man, out of a job, is found among the tramps. Often these plants, like the working-man, can look back to more prosperous days, when they had an acknowledged position in the world. Of this class, I count the white campion or evening lychnis (*Lychnis alba*), which strayed into my collecting grounds for the first time this year, and which I decided to make the most of, fearing that it might move on to pastures new another year.

This species is doubtless an escape from some old garden, for the flowers are attractive enough to be valued, and are fully the equal in beauty of many kinds that are given a place among cultivated things. The plant scarcely behaves like a true immigrant; there is nothing in its bearing which betokens an intention of conquering the new world for itself. It seems quite satisfied with a few inches of earth in which to root and cares not at all for admiration. During the day, when botanists are abroad, it has an ordinary and weedy look and it is not until evening, when the botanist has betaken himself to his books, that it unfurls its pretty white flowers and sends a delicate perfume into the night as a notice to the insects. Apparently insect visitors are of prime necessity, for the flowers are usually dicœcious. In the staminate plant, the clustered anthers appear at the top of the corolla "tube," encircled by a delicate ruffle formed by the crown of the petals. The pistillate plant, on the contrary, has its styles and stigmas projecting nearly half an inch beyond the rest of the flower, in order to be sure of obtaining any pollen that may chance to pass.

There is a noticable difference in the appearance of the two forms of flower, so much so that one might easily mistake the staminate plant for the night flowering catch-fly (*Silene nocti-*

flora). The calyx and claws of the corolla form a slender tube quite unlike the tube of the pistillate flower. The calyx of the latter is inflated by the swollen seed-pod at maturity, but even before it begins to sustain pressure from the swelling pod, it is much larger in diameter than those calyces which never expect to bear fruit. The full grown seed-pod is of itself an attractive object with its ten little notches at the top where the seeds escape.

The vitality some of the flowers possess is amazing. A spray carelessly thrown aside after examination in a cool room was found the next evening in full bloom, although it had been without moisture of any kind for a day.

WILD FLOWERS IN THE GARDEN.

To a lover of wild flowers many of the cultivated forms commonly found growing in small gardens lack much of that irresistible charm and attractiveness possessed by their indigenous relatives. Yet how seldom do we find people who are trying to cultivate the wild flowers! One is led to presume that people choose to pass by the delicate and graceful native flowers for the often bold and showy but not more beautiful varieties figured in such brilliant colors in florists' and seedsmen's catalogues—a presumption which I fear is but too true. These people can see no beauty in the flowers of our fields and hillsides, simply because they are common and can be had for the gathering, and because Nature instead of a professional florist has propagated them. There is an opinion among many that native plants will not succeed if brought into the garden—an opinion which is without foundation if the conditions of the garden can be made somewhat similar to those of the field. But many native plants when brought into the garden are planted where the temperature, soil, amount of moisture, sunlight and shade are very different from the natural conditions under which the plants have been growing, with result that the plants vary to such a degree as to lose much of their native beauty and attractiveness, even though they thrive. This is probably why native plants are not more com-

monly seen in cultivated gardens. There is, however—and with much pleasure I notice it—an increasing tendency on the part of nurserymen and plant dealers to include in their lists of hardy plants many of our common ferns, shrubs and flowering plants. One dealer of whom I know sends out a catalogue containing nearly all the ferns of the region in which it was published, as well as many of the flowering plants like columbine, bloodroot, hepaticas, anemones, cypripediums, asters, goldenrods and many others. Then, too, there are shrubby plants like laurels, viburnums, dogwoods, elders, hawthorns and roses, to say nothing of native trees. This tendency is indicative of a healthy condition and growth in the progress of popular gardening. For it is by using natives and growing them as naturally as possible rather than by using foreign plants, of which they know little or nothing, that the masses will create the most pleasing views in their planting. If they follow Nature, people will not go far astray. A corner of one's place, at least, should be devoted to native shrubs and plants, and unless the cultivator be exceptionally fond of glitter and show he will probably find it the most attractive and interesting spot of his garden. To what flower can we attribute a more shy or delicate grace than to the nodding columbine (*A. Canadensis*), as it peeps from a secluded nook between the rocks? Though its native habitat is the summits and slopes of rocky hills in sun or partial shade, it will thrive equally well in the garden. I have seen it grow and flower profusely when along the north side of a building, in a place scarcely ever reached by sunshine. What early spring plant is more charming than the rue anemone? This season I chanced to come upon a fine specimen while roaming over a rocky hill. The flowers were well opened, but I took it home and gave it a place in the garden. It did not seem to mind being transplanted, and for nearly two weeks was a source of great delight to every one who beheld it, being a mass of continual bloom. I am interested to know if it will find a congenial home in my garden. The bird-foot violet (*V. pedata*), thrives well in cultivation, but is inclined to grow much larger than in its

native habitat. Usually it is found only upon dry and rocky elevations, where there is little soil—which may perhaps account for its small size. In a rich, sunny garden one would scarcely recognize it. Both leaves and blossoms are much larger, and the plant frequently grows twice or three times its ordinary height. In certain places this species may be used with good effect as an edging. Probably no plants can be employed along the north side of a building that will give so much satisfaction and make such an attractive border as our native ferns. These are especially good against a brick foundation, uniting the structure with the lawn. The ostrich, cinnamon, sensitive, christmas, regal and maiden hair ferns are especially good for this purpose, though some of the others are nearly as desirable. Transplanting may be practiced at any time during the season, though probably it can be best done in late autumn or early spring.—*From an article by W. E. Britton, in American Gardening.*

NECTARIES OF THE BRACKEN.

The presence of nectar-producing organs among many flowering plants is a matter of common knowledge, but the occurrence of such nectaries among ferns seems scarcely known. They are known, however, in three genera of tropical ferns and in addition our common bracken (*Pteris aquilina*) possesses them in abundance. Prof. F. E. Lloyd, who has been studying their structure, says of them in a recent number of *Science:* "The nectaries in *Pteris aquilina* occur on the fronds at the bases of the pinnæ and pinnulæ on the morphological lower side of the leaf. The largest and most conspicuous are the lowermost, that is, those at the bases of the first pair of pinnæ. On one developing frond, therefore, one may observe a complete developmental series. When examined macroscopically the glands appear as approximately oval areas just below and extending somewhat into the angles formed by the mid-veins of the first and second, and second and third, orders. The external surfaces of the glands are smooth, because of the absence of the chaffy scales found else-

where on the young frond. Their color is brown-red in the central part of the nectarial surface, developing into red on the edges. Later the red color is lost, and the organs are then deep green. The secretion of nectar is very abundant during the unfolding of the frond. So abundant is it in fact, that large beads of the limpid fluid may be seen from a distance, resting on the nectaries or running down the petiole. With a hand lens, one may easily note the accumulation of nectar after the surface has been wiped off. Darwin found that a drop of the liquid was formed in six minutes. Handling and tasting the secretion shows it to be sirupy and very sweet. According to Bonnier the sugars saccharose and glucose are present. Here, as in analogous organs in other plants, the exudation is quite independent of bleeding pressure. Leaves which have been broken off continue to produce nectar for some days, provided, of course, that they be kept in fair condition. As the frond ages, the activity of the glands is lowered, until they finally cease to secrete and become functionless as nectaries."

Prof. Lloyd finds the surface of the glands to have a dozen or more pores scattered over them from which the sugary solutions ooze, and believes the pores to be similar to the ordinary "breathing pores" (*stomata*) of the leaf. In the bracken the stomata are absent from the stems except for two bands of stomata, one on either side of the flattened upper side of the stems, and the glands arise at points along these bands. In offering an explanation for the presence of the nectaries the author says: "F. Muller pointed out that in Brazil the fern is visited by an ant of which a leaf-cutting species stands in dread. To this Francis Darwin answers that the plant has few natural enemies—meaning, presumably, in England, though this is equally true, so far as observation goes, in North America. Francis Darwin further suggests, in view of the possible weakness of the above explanation, that the gland is either an organ which was formerly of use and is now passing away, or that it is connected 'with some unknown process of nutrition. That its activity 'is decidedly con-

nected with the growth of young fronds' stands in favor of the latter view."

Those who have had occasion to examine our plant in spring, must have noticed the great number of large black ants to be found on the unfurling fronds. Whether their visits are of advantage to the plant is not apparent, although it is certain that they are attracted by the nectar.

VARIETAL AND SPECIFIC NAMES.

Generic and subgeneric names are expressions of arbitrarily formed groups which have justification simply in their convenience. From a Darwinian standpoint, these groups must contain species which are not less related to one another than to species assigned to other genera or subgenera. There is to be, in fact, a natural continuity or contiguity as with the inches on a foot rule. But granting this, it is then a matter of taste or custom how large such divisions may be made. The subgenera of one generation or one author are often the genera of the next. Species and subspecies, on the other hand, are units isolated by nature. It is not a matter of taste how many species exist, though one might imagine so, to read the current botanical literature. Ultimately we shall have to know how many forms stand physiologically isolated from one another and these will be recognized as true species. Subspecies are similar, except that at some point the isolation is as yet incomplete. The word variety may as well be abandoned as a distinct category; but it is useful as a refuge when we do not know the proper status of a plant. The "form" (*forma*) is really something different. As I understand it, it expresses a phase existing wholly within specific limits; a result of the variability of the organism, spontaneous or induced by external conditions.—*T. D. A. Cockerell in Torreya.*

NOTE AND COMMENT.

Introduction of Potatos.—Potatos, when first introduced to Russia in 1769, and being known as "Devil's Apples," gave rise to serious rioting.—*Gardening World.*

Antidote for Ivy Poisoning.—According to *Popular Science News*, Nature has provided a most efficient remedy for poison-ivy poisoning, in the shape of the widely spread flower known as spotted touch-me-not (*Impatiens fulva*). It is also called the jewel-weed, and is very abundant in the water courses during June and July, when the poison-ivy (*Rhus toxicodendron*) and the poison sumac (*Rhus venenata*) are most poisonous. The remedy is applied by expressing the juices of the plant and applying it to the skin which has been poisoned. Who can say whether there is any virtue in this remedy?

Preparation of Cocoa.—The so-called cocoa-beans are borne in melon-shaped pods on low trees, similar in appearance to plum trees. Each pod contains a hundred or more "beans" embedded in a mucilaginous matter. At maturity the seeds are taken from the pods and undergo a process of sweating to free them from this mucilage—at least this is the modern way. A writer in the *Bulletin* of the Botanical Department of Jamaica, however, says that in Trinidad barefooted coolies walk over the drying beans and in this way take up the mucilage.

The Man-Eating Tree.—Much of what the magazines are printing on out-of-door subjects, at present, falls under the head of "Newspaper Science," which is well known to be no science at all. Here is a good example from a recent number of the *Woman's Home Companion* in regard to a most remarkable man-eating tree: "There is no tree in the world so peculiar or horrible as the man-eating tree of Madagascar. Shaped like a pineapple, growing to the height of eight feet, from the top hang down enormous leaves, while towering above are five or six long white palpi, which bend and bow in the breezes like some

uncanny thing. The Carls Ruhe *Scientific Journal* some time ago gave a fine description of this wonder and its shrieking worshipers. At certain times in the year large meetings are held, where wild incantations and weird dances take place. Finally, when the excitement is at its height, one woman, whose fervor surpasses that of the other worshipers, approaches nearer the tree, drawn irresistibly on by her fanatical zeal until she steps on the leaves, in order to drink of the sweet liquid that lies at its base in a sort of inverted plate. Then the inert mass of leaves that stretches from the base to nearly the top of the tree, and which is two to three feet thick, the lower part of each leaf being three feet wide and filled with stiff hooks, suddenly warms to life, and as the unfortunate victim sinks into a delicious sleep she is grasped in the clutches of these cruel hooked leaves. The slender palpi droop and fold about her. The larger leaves acting more slowly, but none the less surely, steadily bind and press until the victim is completely obliterated." This is fairly like what the sundew might appear to a mosquito or small fly, but as for a plant large enough to eat human beings, we may add with the *Companion*, "There is no tree in the world so peculiar or horrible!"

Largest Flower of the Pea Family.—The *Bulletin* of the Botanical Department of Jamaica, records the flowering there, in April, of that member of the pea family which bears the largest flowers of any of its tribe. The plant—*Camoensia maxima*—is a native of Africa, and when discovered by the botanist, Welwitsch, bore flowers a foot long. One may gain some slight idea of the appearance of single blossoms by imagining a sweet pea or locust blossom increased to the size of a large cabbage. At Hope Gardens, Jamaica, the vine is growing over a calabash tree on the lawn. It produced two racemes of flowers, one with thirteen, and the other with eight blooms. The flowers measured ten and one-half inches from the base of the sepals to the tip of the standard, the latter being nine inches high and four and one-half inches broad. The petals are pure white, with edges

beautifully crisped and of a golden hue. The standard, in addition, has a deep shading of yellow down the centre, breaking up into small, irregular patches of pure gold near the apex. When in flower, this must be a truly magnificent sight. Welwitsch describes it as "a robust shrub climbing to a great height and then hanging down its graceful branches."

Another Compass Plant.—A closer study of our plants has shown that the leaves of many of them have a decided polarity. One of the best examples to be found in eastern gardens is the prickly lettuce *(Lactuca scariola)*, whose leaves, turned edgewise and pointing mostly north and south, are sufficiently noticable to attract the attention of even the casual observer. A writer in the *Ohio Naturalist* notes a similar peculiarity in the leaves of the common fleabane *(Erigeron Philadelphicum)*, although in this plant the plane of the leaves may lie in any direction.

Number of Our Fernworts.—With an increase in the study of our ferns the number of species is found to be considerably augmented. Mr. B. D. Gilbert's recently issued "North American Pteridophytes" enumerates 266 species, 55 sub-species or varieties and 115 lesser forms of ferns and fern allies in North America north of Mexico. Mr. Gilbert's is the most complete list of these plants ever issued in this country.

The Ants and the Partridge Pea.—On each leaf-stalk of the Partridge Pea (*Cassia chamaecrista*), about half way between its junction with the stem and the lowest pair of leaflets, is a small gland about the size of a pin head slightly raised above the surface of the leaf-stalk. It is circular or somewhat lozenge shaped in outline and no doubt many who have examined the plant have wondered as to its utility. Some lesser forms of creation, however, seem not to have been bothered on this score, but have laid the plant under ceaseless contribution. In the center of the flat upper surface of each gland there is a tiny opening just visible to an attentive eye, from which a viscid substance constantly oozes, forming a tiny globule. This seems ex-

ceedingly attractive to the common brown ant. From dawn until twilight the glands are carefully tended, each ant seeming to claim the tip of a separate branch as its own, and visiting all the glands upon it with great regularity, reminding one of a like proceeding on the part of the yellow-bellied woodpecker after he has sunk a series of wells in maple or birch. The advantage to the plant in thus feeding the insects is not apparent, unless by this method it confines their attention to the leaves and so escapes the wasting of the pollen in the flowers. Perhaps some one can suggest a better explanation.

The Arctic Flora.—"In the polar regions," says *Review of Reviews*, "the winter lasts far into April; in May the temperature rises quickly and July is the warmest month in the year, while in August the sun's radiation decreases. The explosion-like awakening of the polar plant life is also a result of these sudden changes. In eight days the snow melts; green leaves and blossoms cover trees and ground which a week before were covered by deep winter snow. The higher north, the swifter is this change from winter to summer. The rapid progress in the maturity of the Arctic vegetation is also explained by the peculiar constitution of the floral organisms. The buds of blossoms and leaves are formed in the fall. When the warm season sets in the buds have only to uncover and mature. In reality these polar countries are veritable deserts, and the resources to fight the nature of a desert are same in the Arctics as they are in the Sahara, inasmuch as the plants of both regions have organisms allowing the greatest possible economy with usable water. The root sytem is very shallow, usually but five to fifteen cm. deep; in greater depths there exists such a low temperature that no humidity can be absorbed from it. The stem is covered by a more or less heavy bark, and grows above ground usually with only a few thin branches and leaves. These leaves indicate the water-saving nature of the plants. They are usually grouped in rosettes, small and rounded, seldom parted and often as hard and stiff as fir leaves, leathery or thickly fleshy."

Yellow Pine Cigars.—According to *The Forester* the needles of the western yellow pine (*Pinus ponderosa*) are now being used as a partial filling for cigars, "imparting a flavor not the least disagreeable, and calming to the nerves." Pacific Coast "Havanas" may yet crowd the various cabbage leaf brands out of the market!

Our Native Hawthorns.—Certain genera of plants in which there is considerable tendency to variation have afforded the modern species-makers no end of employment. In these genera the segregation of "new species" has reached a point where it is extremely difficult, if not impossible, for one not a specialist to perceive the differences. Those who are fond of poking fun at this school of scientists, assert that the differences between the species of violets are now so small that in order to identify a plant one must not only know when and where it was collected, but *who collected it!* The hawthorns are the latest plants to receive attention of this kind from the scientist. A decade ago our best botanists were satisfied that there were about ten species of hawthorn (*Crataegus*) in Eastern America. Now we are gravely assured that there are no less than one hundred and twenty! These additional "species" are founded upon slight variations in the original ten, but the wisdom of considering them of full specific value, equal to the species first known, seems doubtful. Some of the characters depended upon are such trival ones as size of the calyx lobes, whether they are reflexed or spreading, a difference of two in the number of stamens, the color of the anthers, size and color of fruit, length of the fruit pedicels, etc. Those who have ever closely observed plants under cultivation will be willing to subscribe to the statement that differences like those mentioned may be found in seedlings from a single plant. The June *Plant World* prints an article from which our facts are gathered, but the editor wisely observes "the present tendency toward an inordinate multiplication of species will result some day in a violent reaction."

EDITORIAL.

In subscribing for a new publication, one must always take into consideration the amount of value to be gotten out of it. If one desires mere paper and ink he is recommended to buy a New York Sunday paper; if he wants general literature he should try some of the big magazines; if he wants technical articles on abstruse subjects there are various botanical journals; but if he wants information on flowers and flower-lore we are sure there is nothing better that THE AMERICAN BOTANIST. There are many of us in the position of the man who said he liked everything about flowers except Botany. It is our intention to keep out of our publication the particular kind of botany he had in mind. We are making no advances to the dry-as-dust scientist, being engaged solely in offering to the lay reader entertaining and reliable matter about our plants. It is, however, a pleasure to find the names of many scientists (not the dry-as-dust kind) among our subscribers and we hope ultimately to get all who are alive to the beauties of plant life on our lists. Our present readers will therefore pardon an occasional word for ourselves in this column, and perhaps themselves help on the work of securing subscribers by speaking of the journal to others.

The prices charged for the early volumes of many botanical journals seem to indicate that from a merely speculative standpoint, the purchase of these when issued is a very good investment. In two years Vol. 1 of *Rhodora* has appreciated fifty per cent.; the first five volumes of *The Fern Bulletin* are quoted at an advance of from thirty-three to one hundred and seventy-five per cent., while certain volumes of *The Forester* have increased in value four hundred per cent. in half a dozen years, single numbers of some issues being quoted at $1.00 each. Few investments in the business world can show better returns.

One of the best ways to get thoroughly acquainted with a wild plant is to set out specimens in your garden. You may

visit the same species in the field many times, but you will never get beyond a mere "speaking acquaintance" with it there in comparison to the degree of familiarity attained when it becomes a resident on the borders of the lawn or in some shady fence-corner, where it may be visited at all times of the day, and if desired, at night also. Still more interesting, because each day some new trait unfolds with the developing plant, is the raising of mature plants from seed. An exchange bureau, to which one could send seeds of the interesting plants of his locality, and obtain seeds of others, might be of value to many correspondents. If those who are interested will notify us, a bureau of this kind will be arranged in the autumn and a list of seeds for exchange mailed to each contributor. Exchangers should prepare to collect twelve packets of one kind, and for these, may select ten different packets from other localities. Among those plants which would seem most desirable for this purpose are the marsh mallow, musk mallow, the showy asters and golden rods, and other composites, the gentians, the sea pinks and the members of the rose and pea families. It should not be forgotten, however, that showy flowers are not the only things about plants that interest us, and therefore the seeds of those species with remarkable forms of leaves or habits of growth will be desirable.

A new feature is injected into the discussion of what constitutes a weed, when we consider the different values accorded the same species in different parts of the world. Away up on the slopes of the Blue Mountains in Jamaica, where in January roses are in full bloom and strawberries are ripe, I saw them cultivating the common white or ox-eye daisy in the flower beds and was informed that it was necessary to give them considerable attention to keep them from dying out. Here a "weed" had turned to a "flower," but near by on the lawn the round and smiling countenance of the dandelion beamed as brightly as it ever does in more northern climes, and served to emphasize the elevation of its companion. By blooming where it was not wanted the dandelion

was still a weed, proving conclusively that the definition of a weed as "a plant out of place" is the true one. And yet how small an accident sometimes saves a species from becoming "out of place." Numbers alone in the case of the dandelion make it a weed, for if there was only one dandelion-spangled lawn in all the world its owner would value it highly and people go long distances to see it. And is there a more showy and beautiful plant than the common toad flax? If it were not so common we should be cultivating it in our flower beds and borders along with highly prized exotics. Indeed, it is said that all the multitudes of this species that now threaten the farmer have sprung from ancestors cultivated in the flower garden. The musk mallow, the high cinquefoil (*Potentilla recta*), the dame's violet (*Hesperis matronalis*), and many another in the farmer's list of weeds have a similar origin, and have left the confines of the garden for the freer life of the fields, roadsides and river banks to the delight of all lovers of the beautiful and the disgust of none save the cultivator of the soil.

BOOKS AND WRITERS.

—"A Laboratory Manual of Elementary Biology," by Prof. F. D. Heald, will be issued in September.

—Lee & Shepard announce "Among Flowers and Trees With Poets," to be published in September.

—The publication of "Southern Wildflowers and Trees," illustrated by Mrs. Ellis Rowan, has been postponed until autumn.

—Wm. Briggs, Toronto, has recently issued "Sylvan Ontario; a Guide to the Native Trees and Shrubs," by W. H. Muldrew.

—The late Dr. Thomas C. Porter had for many years been preparing a complete flora of Pennsylvania, but died before it was printed. The manuscript was practically completed, however, and it is announced that it will eventually be issued under the editorship of Dr. John K. Small.

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VOL. I. SEPTEMBER, 1901. NO. 3.

MULLEIN AND POKE.

BY ERNEST WATERS VICKERS.

I cannot forego a little tribute to these lusty herbs in their season. The mullein is always conspicuous and interesting. It was reputed by the simplers of old with the power of soothing, and in the language of flowers means good nature. This herb had laid strong hold on my imagination ere I knew what meaning the books had crowned it with. I can scarcely tell why, but it is a rustic classic to my heart with its great hoary mat of earth-hugging leaves, vigorous and cheerful in latter autumn and even peering out from under the thawing snows of winter, where it suggests elements of unconquerable rugged strength. It is just the herb for stony and waste places and poor and neglected hill pastures. Put its tall, stiff wands among strewn stones, scatter about some sheep, with their weather-worn coats, suggesting the mottlings of the lichens on the rocks, to which they seem legged brothers, and you have provided the picturesque elements which should tempt any poet-artist of out-door scenes.

Then the mullein's ascending spire where the canary-lemon flowers by their upward progress mark the succession of summer days. It is a string of petals followed by a string of seeds on those stiff stems, as persistent and forward-pressing as the successive hours! This plant seems very near the earth, more earthly than many another, which makes us forget its origin in the daintiness of its position. Perhaps this is a hint at its charm; it is lowly, humble, homely, and therefore, as in certain rude farmers, we fairly see and smell the old Adamic man—bow down before a certain exalted lowliness. And in keeping has the lemon flower

been given that balmy sweetness, which we must stoop to smell, smacking of plowed land, a genuine soily odor, as strangely fitting payment for its homely humility.

The winged shaft, with its single or three or more branched top, like a trinity of wax tapers, suggests a candelabrum. It is a simple and noble form, unique and worthy of the attention of art; a thing fit to be chiseled in stone or raised in a base of silver on a field of gold. Good nature—let us at least say when we behold it afield, that it shall be our armorial emblem.

Philip G. Hamerton in "The Sylvan Year," and we quote from so good a book with gladness, says: "Of all the plants that grow the mullien in its decay comes nearest to that most terrible form of human poverty, when the victim has still, to his misfortune, vitality enough for mere existence, yet not enough to make existence either decent or endurable. * * * Their misery is like that awful destitution that stands clothed in the last shreds and remnants of prosperity."

To appreciate this you must see a band of old mulliens on a December or January night clustered on a bare hill in a flying storm, by lantern light or obscure moonlight. They take all "the whips and scorns" of winter in an inflexible spirit of good nature, seeming in that still upright, though lifeless form, to retain some vitality. Nothing to relent or sorrow over if they could recall the past. Hundreds of thousands of seeds perfected and being scattered even now by every blast. They are grandly erect and unbroken in all their ruin, like a noble character which no mischance of time can overthrow.

The Poke likewise delights the fancy in every way, though antithetically. From the time its edible shoots push up into the midst of the genial joys of spring all through its enchanted unfoldings, till it gracefully hangs out its spreading sprays with their fruitful "honors thick upon them," it is worth attention. Its fine, smooth red stems, handsome leaves and loose original style of branching—which measure the successful feeding of its roots—is like an inverted chandelier with all its candles set in

clusters. The very flowers and fruits, like the rest of the plant, take space in which to be individual and airy. All about it are the signs of a leisurely, rank looseness and steady aggression. It is a gross feeder, only attaining its peculiar protection in the richest spots, and I wonder what it would do if it had all the food it could use. Visions arise akin to that of Jack's bean-stalk experiences.

It is a watery and plethoric herb from its youth up, and when autumn comes, blushes like a very wine bibber, and being so watery, how quickly and utterly is its ruin under the frost. The mullien is an old Puritan squatter sedant on his barren hill, where he must wrestle his sustenance from the soil, whose constitution is of the rocks, geologic. But this poke-weed is the son of luxury, liveth in rich places and waxeth fat, but how quick is his decline and fall! Long ere winter has taken matters in hand it is bent and broken upon the earth as if it had been made of pasteboard—the very emblem of fast rising, transient success and complete irretrievable ruin. In his pride he was the very dandy of the woods; how grandly he bore those bloom-clusters, green fruits and ripe, on stem ends not hanging down as of pure indolence, but still languidly half-hanging, showing even then his internal debility. Behold how he lies, his stalks carmine no more, but bleached like yellow bones, broken like pipe stems—the largest and most ignoble vegetable wreck to be seen in all the woods.

OUR SOUTHERN CANES.

In the Southern States the bamboo tribe of grasses is represented by two tall species known as canes. These grow along streams and in other low grounds and form dense thickets known as canebrakes. In many of their habits they closely resemble the true bamboos, as will be seen from the following account taken from Dr. Mohr's "Plant Life of Alabama:"

"These two species, which resemble each other so closely in habit, differ greatly in their modes of reproduction, a subject of

much interest of which but little is yet known and one which invites the attention of the investigator of the ecological relations of plants, and no less that of the agriculturalist, on account of the value of the canes as pasture plants. *Arundinaria tecta* (switch cane) rarely exceeds the height of 12 to 15 feet, and the slender culm branched from the base is seldom half an inch in thickness. Early in spring, apparently every three or four years, the paniculate flowers are produced on naked radial shoots scarcely exceeding 18 inches in height, while the tall flowerless canes are sent up every season from the long creeping rhizomes. *Arundinaria macrosperma* (large cane), from 15 to 30 feet high and frequently an inch and over in diameter, produces the panicles of its flowers in the axils of the branches at long and indefinite intervals of time. It is evident, therefore, that generations may pass by before the spectacle of such a canebrake in bloom is ever witnessed. For example, in the beginning of the summer of 1896, the inhabitants of Russell County were astonished suddenly to find the large canebrakes bending under the burden of their heavy nutritious grains, which attracted large numbers of birds and beasts. The farmers regarded this as an entirely new plant, and, finding their stock grow fat upon the seed, stored away quantities of it, not only for future feeding, but under the delusion that if sown it would constitute a crop of small grain equal in value to any previously grown. But in the light of experience it is to be presumed that a period of not less than forty to fifty years has to pass before the propagation of this plant by sexual reproduction takes place; with the maturity of the seed the vitality of the plant is exhausted and the cane decays. In the succeeding season, from the spontaneous stocking of the ground with an abundance of seed, a new crop springs up. The seedlings produce no branches during the first year. These simple sprouts, which are known as "mutton cane," are tender and sweet and afford the best of pasturage. They are particularly sought after by bears, which find the impenetrable density of the canebrake their securest retreats."

THE OX-EYE DAISY.

Like the English sparrow (*Passer domesticus*) and the cabbage butterfly (*Pieris rapae*) there has come to us from European shores, and probably earlier to that continent from Asia, a pretty weed called *Chrysanthemum Leucanthemum*, or in common parlance, the ox-eye daisy, the word daisy being the well-known corruption of the Anglo-Saxon daeges-eage, day's eye, which is of more than usual fitness, since at nightfall, or on the approach of stormy weather, the ring of white ray florets closes gently over the yellow eye, and the flower is fallen asleep.

A long list of other common local names has been applied to this much admired, much despised flower, among them being white-weed, dog-daisy, bull-daisy, butter-daisy, big-daisy, midsummer-daisy, moon-daisy, horse-daisy, poorland-daisy, or maudlin-daisy, dutch-morgan, moon-flower, moon-penny, great white ox-eye, poverty-weed, white-man's weed and herb Margaret.

It is commonly distributed over the northern and eastern United States, less abundantly toward the South and West; yet to the friend living in northern Ohio a New York daisy field proved a revelation of beauty never witnessed before.

The daisy has taken kindly to our soil, and has evidently come to stay. It does not ask for much; any waste place will do, and every year the whiteness grows till a veritable Milky Way has dropped from the sky. Beginning with May, it claims all months for its own into the fall season, but it especially loves the June days and the company of the buttercups and clover and swinging, blossoming grasses, and it then puts forth its best show.

Occasionally, unbidden, it nestles among the mowing fields, and the practical farmer is at once upon his guard. To him, a daisy is a worthless thing, exhaustive to the soil and suggestive of poor land. Though the stalk be lain low and the heads allowed to wither and die, the root remains, a perennial, and at

least as many starry eyes look upward with the recurring seasons.

The small double English daisy, that grows only by cultivation in our lawns and gardens, was the "wee, modest, crimson-tipped flower" of the Scottish poet, the "gowan" of Scotland and the "bairnwort" of Yorkshire, and is most dear to English eyes, since, we are told, it is as the grass of the field in abundance. The Christmas and Michaelmas daisies are included as species of aster.—*From an article by Susy C. Fogg, in Nature Study.*

AERIAL RUNNERS IN THE STAR FLOWER.

Those acquainted with the star flower (*Trientalis*) and with its life under ground are familiar with its slender white tuberiferous runners one or two feet in length. It is of great interest in the dry days of late summer to lift off the deep covering of moss and disclose this outcome of the summer's work with the well-developed tuber already rooted in the ground. The protective bend of the bud is especially marked and at intervals along the runners are minute scales similar in nature to those more developed on the upright stem. As the white runners thread the moss a touch of rose-color here and there shows where they have run nearer to the surface and felt the influence of the sun. These traces of color suggest in a novel way the stem-nature of the underground runners.

Some years ago, in late summer, at Machias, Washington County, Maine, a few peculiar specimens of the *Trientalis* were found. From the axils of the leaf-like scales were produced slender aerial runners. They were of a deep carmine color, and an unusual coloring of the leaves suggested some injury or blight. These plants showed no sign of blossoms except in cases where blossoms had not perfected fruit. These aerial runners, as they dip into the moss, form tubers similar to the usual subterranean ones. Ordinary plants of *Trientalis* at this season show very long underground runners and well developed tubers, but these plants for some reason seem to have put their strength into these

runners above ground. They have continued to hold their own in that one spot, changing only from the mossy base of one tree to that of another. This place is just on the border line where the "old growth" type of vegetation meets the tangle of a sunny second-growth.

Sometimes the graceful runners are swinging free, sometimes they have just penetrated the moss enough for the tuber to form. Last summer (1900) after the extreme drought I was unable to find a specimen in the old place for a long time, but one plant finally appeared with a well developed tuber and the same characteristics as in previous years. I was once attracted to what appeared to be a similar condition of growth in *Trientalis,* but it proved to be another interesting phase of life. A couple of these plants were growing on the moss covering of an old fence log. When the white underground runners reached the perpendicular end of the log and lost the covering of moss, they assumed the rich color of the aerial runners and swung out free over the edge instead of following out the root instinct and seeking the dark again. Here again the pink spots on the white runners showed at intervals the effect of the light.—*Robina Silsbee Smith in Rhodora.*

BAMBOO SEED AS FOOD.

"It would not appear to be very generally known," says a writer in the *Indian Forester,* "that the seed of the bamboo is not only fit for consumption by man, but that, in this corner of India, it is being collected and so consumed to an extent sufficient to ameliorate a very pronounced local scarcity. How far outside the Dharwar District the seeding is taking place I am unable to say. It undoubtedly extends some distance into Kanara. Here two taluqas are alone involved. In them it is rarely possible to meet with a single culm not undergoing the process. The approximate area may be stated at 75,000 acres, extending fifty miles from north to south, along belts three to eight miles broad. It is generally admitted in this area that but for this prolific seed-

ing, owing to the great scantiness of the rainfall during the past two seasons, the poorer classes would have been hard pressed. The fact that there has been an unprecedented deficiency in the rainfall over a tract of country which is almost invariably well favored in this respect, leading in its turn to a sudden seeding of the bamboo, is significant and of interest; but with this aspect of the question I am not at present concerned, except in so far as to incidentally draw attention to the old Brahmin saying, 'When the bamboo produces sustenance we must look to Heaven for food.' The purely local inhabitants are not the only ones who are taking advantage of the present situation. The news has spread far and wide into territories where forests do not exist, and the influx of people represents a serious factor in the preservation of the reserves from fire. It is a common thing to see cart-loads of bamboo grain plying along our roads where but a short while back grain in any form was at a premium. When the seed is ripe, a very slight shaking of the already dry stems is sufficient to induce it to fall plentifully. The flour is either mixed with rice or 'jowari,' or eaten by itself, prepared into the ordinary flat cakes of the country, termed 'chapatis.' It has been found that two women can collect about eight pounds of the seed in the day, which, after the removal of the husk and bran, is reduced to six pounds. This quantity will make thirty cakes seven inches in diameter, or sufficient, it is said, to feed an able-bodied man for six days."

FERTILIZATION OF JASMINE FLOWERS.

It is remarkable that the most simple things are those one knows the least about. Everyone has seen the flowers of the Jasmine, but no one knows exactly how their fertilization is effected. Recent researches, however, have helped to throw more light on this interesting subject. Upon examining a flower of *Jasminum* one at once notices that the corolla tube is narrow, and that the anthers are disposed in such a way as to almost completely close the entrance, leaving a passage between themselves

so small as to be hardly apparent. The flowers also are horizontal, and the pollen cannot fall upon the stigma; direct fertilization is therefore not possible. It is here that the intervention of insects becomes necessary—but to which must we turn? Many dipteras visit the flowers of the Jasmine, but their probosces are short, and they are not able to gather the nectar. It is the same with bees. One *Bombus hortorum*, in certain cases and by reason of the length of its proboscis, can obtain a little of the nectar that is secreted at the base of the corolla tube, but here there is another hindrance. This bee, for some reason or other, is not fond of Jasmine flowers, and it is only occasionally that it deigns to be attracted by them. The majority of the butterflies are hardly more useful; a beautiful little sphinx, however, bearing the name *Mactroglossa stellatarum* appears to accomplish the task conscientiously. From eight o'clock in the morning until eight o'clock in the evening one sees it in groups upon the flowers of Jasmine. So agile is it that it is capable of visiting fifty flowers a minute, and rarely goes to the same one twice. The proboscis, 28 millimetres long, permits of its reaching the nectar, but it can only obtain this latter by passing its proboscis through the narrow passage between the anthers. Pollen then naturally adheres to it, and this the obliging butterfly will unconsciously deposit upon the stigma of the same or another flower.—*Le Jardin.*

Tree Lobelias of Abyssinia.—We are so accustomed to look on Lobelias as annuals, or at most as perennials, that it comes as a surprise to many to hear of tree lobelias: nevertheless, various arboreous species of the genus *Lobelia* constitute one of the most striking features in the vegetation of the open parts of some of the loftiest mountains of tropical Africa, where they grow at elevations of 6,000 to 14,000 feet. In habit they resemble a Cordyline or small Palm, having an unbranched stem, with a crown of undivided, pendulous leaves, finally surmounted by a terminal, erect inflorescence several feet in length.—*Gardener's Chronicle.*

NOTE AND COMMENT.

Wanted.—Short notes of interest to the general botanist are always in demand for this department. Our readers are invited to make this the place of publication for their botanical items.

Use for Prickly Lettuce.—In sections where the prickly lettuce (*Lactuca scariola*) is becoming a nuisance, it may be welcome news that this plant is greedily eaten by poultry.

The Current Number.—"Swindled again," said the old gentleman as he threw his paper down. "They advertised to send the current number for 25 cents and there ain't a word about currants in it."

The Shamrock.—A recent number of *Leslie's Weekly* alludes to the shamrock as "the little *green blossom* dear to the heart of Ireland's sons and daughters." Evidently the editor is neither an Irishman nor a botanist.

The Amiable (?) Science.—In view of the many differences that exist between the leaders of botany at present, it would seem that the individual who called botany "the amiable science" must have overlooked a most important prefix.

Lithospermum Pilosum.—This beautiful plant inhabits the Alpine crags and peaks of the Sierra Nevada summits. It has singularly beautiful gray white foliage and grows flattened and depressed, no doubt caused by winter snows. Viewing this plant from a short distance it looks like a pile of ashes. It would make one of the greatest novelties out for scenic effect in landscape gardening.—*S. L. Watkins, Grizzly Flats, California.*

Date Palm Sugar.—The common date palm (*Phoenix dactylifera*) is found growing wild in nearly all parts of India. In Bengal the tree is utilized economically for the manufacture of sugar from its juice, and is a source of profit to the owners. This

aspect of the date tree does not appear to have struck the people of the Central Provinces, Central India and the Deccan generally, where the tree is found growing in groves of thousands. Recently a joint stock company, called the Khandwa Sugar Manufacturing Company, has been launched to work this profit-yielding tree, and started work at Nimar three years ago. So far the results give promise of a bright future.

Compass-Plants.—A distinguished scientist explains that the prickly lettuce (*Lactuca scariola*) is a compass-plant by reason of "phytolytic movements of chloroplasts in exposed cells, paraphototropic reactions, and photeotic, or nyctitropic movements of leaves." If any other scientist can box this vegetable compass more concisely, it is his turn to speak.

Moonseed Poisonous.—*American Gardening* reports the death of three boys at Sharpsville, Pa., from eating the berries of the moonseed (*Menispermum Canadense*). The berries are similar in appearance to frost grapes and the boys ate a great many. In spite of promptly administered emetics they soon died in convulsions. The action of the drug is said to have been similar to that of strychnine. Moonseed is a relative of the well known drug plant, *Cocculus indicus,* which is also poisonous. Although moonseed berries resemble grapes, the ripe fruit is very unpalatable, which fact alone will doubtless prevent many occurrences of this nature.

Armed Plants.—"It is often a matter of conjecture among visitors to botanical gardens and elsewhere that collections of tropical plants are grown, as to the reason for so many of them being armed with thorns, spikes, and prickles," says *Gardening World.* "It is now generally conceded that these members of the torrid zone have got to arm themselves thus against the eternal preying of the herbivorous animals. In some parts where vegetation is scarcer, and where the mammalia are hard pressed for food, the plants are found to be very strongly

endowed with these spines. The thorns or prickles serve as protective armor for preserving the plants from extermination." The more one studies these thorny plants on their "native heath," however, the less inclined he is to attribute the presence of thorns and spines to the attacks of herbivorous mammals. It is a singular fact that the great tree-ferns of the Tropics are heavily armed with thorns, while the herbaceous species, which would be most likely to be eaten by browsing animals, are entirely unarmed.

Plant Protection.—Mr. Frank A. Suter, Lancaster, Pa., writes that the destruction of Dillerville Swamp, which is bound soon to occur, will result in the eradication of several interesting plants from the vicinity of Lancaster. Among these are the golden club (*Oronticum aquaticum*), fringed gentian, ladies' tresses, purple gerardia and *Smilicina stellata*. Mr. Suter asks how this flora can be preserved. He as well as many others will doubtless be interested in the Society for the Protection of Native Plants recently organized in Boston whose mission seems to be the answering of just such questions. This society intends to publish brief articles and leaflets pointing out what plants especially need protection and how they may be protected. Miss Maria E. Carter, Boston Society of Natural History, Berkeley Street, Boston, may be addressed for further information and leaflets. We shall be glad to assist the movement and offer space in our columns for notes upon the subject.

Nature Study and the Child.—It is a fault with much of our nature study writing for children that we make too much of what we term the natural order in the development of plant and animal life. The idea is relatively so new, even to the oldest of us, it has appealed to us with such force, that we attempt to load down the child with it, and set him to dragging a chain in his walks afield. We prepare our text-books in the most orderly manner, and with a gravity which, under the circumstances, is half comical, beginning with man, perhaps, and going back

through the long line of vertebrates to the sea squirts; or, we begin with the sea squirts, and climb painfully up to man again, expecting the boy to be profoundly impressed. But he is not. He is sure to disappoint us. Some day, bald-headed and with spectacles on, he may argue with other spectacled bald-heads, and maintain his ground, that, because a cross-vein in the wing of some insect arises from the principal at an angle of thirty degrees, instead of thirty-five, an entire group should be rearranged; but for the present, being a boy, he hates the thought of any kind of chain and the merest suggestion of order.

Puff-Balls Wanted.—The editor recently had the pleasure of meeting Mr. C. G. Lloyd, who is making a special study of our puff-balls. He is especially anxious to obtain collections of any species of these, except the very large ones, and will gladly pay the transportation charges on specimens sent him. The specimens do not need any special preparation—just carry them home without crushing, lay them aside to dry and then send them, packed so they will not be injured, to Mr. Lloyd, at Court and Plum Streets, Cincinnati. It is suggested that when specimens are plenty a pint of each kind be sent, especially if the species is a small one. While not pursuing this study for the number of new species to be got out of it, Mr. Lloyd is inclined to believe that there are several species in the United States still unknown, and every person who knows a puff-ball when he sees it can assist in settling the question. The best time to collect the specimens is just before they are ripe, but do not discard them even if fully ripe.

EDITORIAL.

The editor of this journal is spending the autumn months in New Orleans. If correspondents do not receive answers to their communications as promptly as usual this note will explain the delay.

We note with considerable amusement the solicitude for the success of this journal expressed in the July number of the *Plant World*. The editor of that publication has grave doubts of our finding favor with the public for a magazine like THE AMERICAN BOTANIST, which consists "of only sixteen pages of reading matter composed largely of extracts" and "without illustrations." It is quite probable that the editor of the *Plant World* is not alone in his opinions regarding such a journal and we therefore take the opportunity of setting forth somewhat more fully the policy of our magazine in order to lay further doubts at rest. In our opinion the number of pages has nothing to do with the case. It would be a queer reader that demanded a large number of pages quite irrespective of what was printed upon them. The value of the goods in small packages has passed into a proverb. We hold that sixteen pages of really interesting matter fully equals twenty-eight pages in which almost anything is used as "filler." Every line in our magazine is selected for its value to the general reader. We make no apologies for clipping from other journals since we are concerned solely in selecting matter of interest to the flower lover, and must take material when we find it. Indeed, this very feature relieves the reader who cares not for technical articles, from subscribing for numerous botanical journals. The pith of all valuable articles will be found in THE AMERICAN BOTANIST. We also hold that illustrations which do not illustrate are worse than none, since they take up space which might be devoted to reading matter. When any of our articles need illustrations, we shall not hesitate to use them. We disclaim all attempts to "popularize science" and reiterate that we publish this journal for the flower lover and *not* the scientist, although the contents of

every issue will be found strictly in accord with the best science. The most satisfactory proof that THE AMERICAN BOTANIST is appreciated, however, is found in the fact that as this third issue goes to press, we have more subscribers on our list than the *Plant World* had at the end of its second year! This ought to be sufficient for our critics.

It is well known that the late Grant Allen was a naturalist long before he was a novelist; but he soon found that writing on natural history subjects did not pay financially, and turned his attention to more lucrative fields. Notwithstanding the change in his subject-matter he always had a fondness for the real natural history and a fine contempt for the hair-splitting scientist who works for glory rather than for love of his subject. His opinions upon this point are constantly cropping out even in his novels. In "The Tents of Shem," he makes one of his characters say: "There are two kinds of naturalists, you know. The superior class live in London or Paris, examine everything minutely with a big microscope, tack on inches of Greek nomenclature to an insignificant mite or bit of moss and split hairs against anybody with marvellous dexterity. That's science. It dwells in a museum. For my part I detest it. The inferior class live in Europe, Asia, Africa or America, as fate or fancy carries, and instead of looking at everything in a dried specimen, go out into the woods with rifle on shoulder or box in hand and observe the birds, the beasts and green things of the earth, as God made them, in their own natural and lovely surroundings. That's natural history, old-fashioned, simple, common-place natural history, and I for my part am an old-fashioned naturalist." This expresses the matter very nicely and will no doubt appeal to many who delight simply to wander among the flowers without a care for the long names by which the scientist knows them.

—A Laboratory Manual of Elementary Biology, by Prof. F. D. Heald, of Parson's College, is to be issued in September.

BOOKS AND WRITERS.

—Ginn & Co. have recently issued a valuable little book for young students of botany. It is by Prof. Geo. F. Atkinson, and is entitled "First Studies of Plant Life." The principal facts in the growth and behavior of plants is described in very attractive form.

—The United States Government has just issued a monumental work on the flora of Alabama, by Dr. Charles Mohr. It is entitled "Plant Life of Alabama," and covers more than nine hundred octavo pages, being one of the most elaborate of State Floras thus far issued. Besides a systematic catalogue of the plants of the State there is an interesting account of their distribution and adaptations. Nearly forty-five hundred species and varieties are listed, of which number a little more than half are flowering plants. Several new species are described. Dr. Mohr's death occurred but a short time before the appearance of his volume, which will remain a most worthy monument to his memory.

—As a general thing a "local flora," unless it be a mere list of names, is of greater interest to the botanizer than any botanical Manual. The author of the local flora usually has room here and there to insert observations on the habits and distribution of his plants and gives his work a living interest, while the Manual all too frequently smacks of dead plants and the herbarium. An unique and most interesting addition to the list of local floras has recently been made in the form of a 65-page pamphlet entitled "Sylvan Ontario," by W. H. Muldrew, published by William Briggs, Toronto. In addition to a list of the trees, shrubs and vines with notes, there is an excellent key to the species illustrated by 131 drawings of leaves and a very comprehensive glossary. This publication ought to do much to advance the study of the Canadian silva and will be of interest to all plant lovers of Eastern America. It is published at 50 cents.

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FOR THE PLANT LOVER

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THE AMERICAN BOTANIST

VOL. I. OCTOBER, 1901. No. 4.

A LIVING COMPASS.

BY ELMA IONA LOCKE.

"Look at this vigorous plant that lifts its head from the meadows.
See how its leaves are turned to the north, as true as the magnet;
This is the compass-flower, that the finger of God has planted
Here in the houseless wild, to direct the traveler's journey
Over the sea-like, pathless, limitless waste of desert."

In the Botanies there are described about twenty varieties of the genus *Silphium;* the tallest, which may well be called a "vigorous plant," since it grows anywhere from three to twelve feet in height, is *Silphium laciniatum*, variously called compass plant, pilot plant, and rosin weed.

On the western prairies, where its use in former times may well be imagined, this plant is found growing in profusion. It was in 1842 that Major Alvord, of the United States army, wrote a description of it, but so strange a matter was for some time discredited by scientists. The various suppositions put forth by Major Alvord, in explanation of its singular behavior, being proved erroneous, it remained for Dr. Gray to discover the true explanation.

A large tuft of what one might describe as giant oak leaves rise from a root in size well proportioned to the plant, as one will find if he tries to dig it. These leaves are singularly constructed.

With most plants there is an upper and under surface to the leaves plainly indicated by their structure, but in the compass plant both sides of the leaf are alike, and both being equally sensitive to the light, in their evenly balanced struggle to gain the sunshine, they assume the position which has given the plant its name of compass, standing nearly upright and presenting their edges, not their tips, directly north and south.

The plant is a large, rather coarse looking perennial, with a rough, hairy surface and a resinous juice. The leaves are deeply lobed, or toothed, and in rich meadows sometimes grow from one and a half to two feet or more in length, and a foot or more broad. From this group of massive leaves rises the tall flower stalk with its yellow flowers, showing by their resemblance to its near relative, the sunflower, that this plant belongs to that immense family, the *Compositae*. Unlike the sunflower, the blossoms are small, but doubtless they increase in size under cultivation, as the florists are now offering the plant under the name of *Sylphium*, and recommending it highly as an ornamental plant with *large* flowers.

There are some erroneous ideas current regarding this plant. It has been imagined by some to be magnetic, and others appear to have the notion that its blossoms instead of the leaves are the parts that constitute the "compass." As to the uniformity with which it shows the points of the compass, a careful observer, after an examination of a large number of specimens, reported that one-third of them bore within half a point of north, and two-thirds within a point.

"Weeds are active enemies, not to be despised so much as hated. They are cut down or uprooted whenever found. So great a pest are they that man has taken them for a type of rank, rapid and useless growth. Yet, when curiosity leads us to observe them, we find beauty even in the meanest."—*W. W. Bailey.*

THE OCTOBER FLORA OF NEW ORLEANS.

By Willard N. Clute.

Here beside the Gulf on the border land of eternal Summer, Nature has not yet thought of putting an end to the blooming season. To be sure the seed pods of many species are now ornamenting flowerless branches, but other plants keep up a fine show and one realizes that Autumn is merely the name of a season and does not necessarily carry with it the idea of fading flowers, falling leaves and migrating birds. No sign that Autumn is here—that is, no sign that is perceptible to Northern eyes—is to be seen, save that given by the goldenrod. In the Northern States the goldenrod's race must now be nearly run; here it is just beginning but there is no promise of a wealth of gold to be lavished upon field and wood, as it is a thousand miles nearer the pole, nor is there an indication that the goldenrod will be followed by a long line of asters as at the North. There is one species of aster blooming here at present along neglected waysides—narrow leaved, slender rayed, pale colored, as if pining for its lusty kin in the Northland; but so far as I have observed this is the only one at all common. But why long for asters and goldenrods when the whole land is overrun with other flowers. The city shares with the country in floral riches. I do not remember ever to have seen elsewhere, roses in such profusion at this time of year. They bloom ungathered in the public squares, they clamber unchecked over the curious squatty houses of old French architecture and whole gardens of them usurp the lawns before more pretentious residences. I have been told that an armful may be bought at the florist's for ten cents. At any rate, here they are in abundance, filling the air with fragrance, especially in the cooler parts of the day.

With the roses grow many plants of more tropical appearance—clumps of bananas in full fruit, feathery grasses twice or thrice the height of a man, giant-leaved *Caladiums,* and palms

and cycads in plenty. Along the better streets palms are frequently planted between the walk and roadway. As for the palmetto, there is no need of planting that, for it comes up of itself along fences and in waste grounds, while in the swamps and on the outskirts it forms extensive thickets and holds its dark green fans aloft as if they were of as much consequence as their more exclusive relatives of the gardens. Notwithstanding all I have said about the plants in cultivation it seems to me that a much greater variety could be grown with very little trouble. Although the climate is moist and warm, just meeting the requirements of the ferns, these plants are rarely seen. There is less than half a dozen native species in the vicinity, but many more from the Tropics could be made to grow here. The same might be said of palms and palm-like plants, but I desist for fear of being considered ungrateful for those that are present.

It strikes the casual observer as curious that a city beaten upon by the Summer sun so mercilessly, should not have more shade trees, especially along the streets. The china-berry tree nestles close to the low houses and spreads its protecting umbrella lovingly over the gray roofs, and here and there magnificent live oaks, draped in festoons of "gray moss" and bearing colonies of the resurrection fern (*Polypodium incanum*) stretch their long level branches across the way, but there are very few streets shaded by a continuous line of trees as Northern streets are. Probably the principal shade tree is the magnolia. Its dark glossy foliage and compact head is seen on every hand. At this season the crimson seeds peeping from the rough cones give a very pleasing appearance to the tree, as if it were blooming again in a different color. There are many trees in the South, such as the sween gum (*Liquidambar styraciflua*), cypress, mulberry and oak that seem admirably adapted for shade trees, but they are comparatively rare in cultivation. An occasional poplar, cedar

and button-wood may also be seen. Large trees of any species except live oaks are quite rare.

Among shrubs the crape myrtle with flowers that look as if made of pink tissue paper is very common. Among shrubs also must be classed the fig "trees," which hang over almost every wall. They are loaded with small green figs at present, but these, I have been informed, do not come to maturity. The season for ripe figs has been past for some weeks and the trees are now dropping their leaves. Unless I class the castor oil plant (*Ricinus*) with the shrubs, I shall not know where to place it. The Northern housewife who so carefully cultivates a few starveling "castor oil beans" in her garden, would be both surprised and pleased to see the same species here, taking on the form and size of a tree and luxuriating in untrammeled freedom on rubbish heaps and in other wastes. In spots where it is cared for, it forms a trunk several inches thick and carries its crown fifteen or twenty feet skyward. Recently much has been written concerning the utility of the castor oil bean in driving away mosquitos. However valuable it may be in other parts of the world, its virtues seem to be lost here. Mosquitos are "too numerous to mention"—without strong language—and all the inhabitants sleep under mosquito bars.

Our familiar friend, the elder, is another plant that attains unusual proportions. Here it is really a tree and bears its clusters of berries far out of reach. I have never seen the European elder tree, but imagine this must be somewhat like it. Along with the berries which are just ripening one sees quantities of the creamy blossoms. This second blooming is said to be due to freakishness upon the part of individual plants, but it appears to me to be so general that I question whether it may not be possible that the plant is trying to develop two blooming seasons a year.

Although we are well within the limits of the orange belt, few of these trees are to be seen. Their place is taken to some ex-

tent by the persimmon, of which several improved kinds are grown here. The first of these have been ripe for some time, and notwithstanding the fact that there has been no frost, are as mild and agreeable to the taste as one could wish.

Leaving the city for the country, one finds many blossoms to interest him. Chief in my estimation is the passion flower (*Passiflora incarnata*) which clambers over the low bushes and continues to hang out its large purple and white flowers. The fruit is a small melon-like affair and is known as a maypop to the few who are interested in such matters. I have not yet had an opportunity of tasting it, but if the flavor should approach that of its relative further South, the grenadilla, I should consider it worth going some distance to get.

This part of the world is so low, and the soil is so little above the point of saturation, that in many places one must keep pretty close to the road or railway while botanizing. As a result of this moisture the plant covering consists principally of swamp-loving species. The cypress is most abundant and shares with the live oak the honor of being the host of the gray moss. In open places the ubiquitous cat-tail rears its well-known spikes, while here and there a gigantic species of arrow-head (*Sagittaria*) with spoon-shaped leaves appears. Another familiar species, the button-bush (*Cephalanthus occidentalis*) is plentiful, and, what impresses me as curious, is just coming into bloom. Certainly the same species does not bloom with the late goldenrods at the North; then why should it do so here? The question remains unanswered.

Where the button-bushes abound, one usually finds the climbing boneset (*Mikania scandens*) festooning the branches. This is by right a Southern plant, but having first seen it in the Long Island and New Jersey swamps, I can hardly fit it into this scene as being a native. In drier places, as along roadsides, the purple clusters of the iron weed (*Vernonia*) light up the green.

After traveling with this plant showing in the landscape almost constantly for more than a thousand miles in many soils and at many altitudes, I cannot help thinking that it is most appropriately named. Common as it is, it is a beautiful plant and one well worth cultivating in parts of the country where it has not found a place for itself.

If one pushes into the wilderness in any direction hereabouts he is likely to soon come upon a lagoon or bayou of dark and slow-moving or stagnant water. And almost certainly the surface will be covered with the fat and thrifty plants of water hyacinth. It is difficult to realize that all their bulk has been taken from the water and the air. Here they float in the bright sunshine, and send up their strong spikes of hyacinthine color. The people call them water-lilies and they are handsome enough to deserve the name. Albeit, the waterman considers them one of the greatest pests; but those who have no desire to thread the devious ways of the sluggish waters,—poets, artists and botanists,—may well pause here on the banks for a second glance of interest and admiration.

PITCHER PLANT AND BUTTERWORT.

By Mrs. G. T. Drennan.

Sarracena flava, the "sulphur colored pitcher plant," in local nomenclature, grows in profusion along the Gulf coast, and is one of our most interesting plants. The flowers are at least three inches across, of silky texture and of the clearest light yellow tint. They bloom with the greatest freedom, brightening the grass, the moss or the fallen pine needles like sunshine. The country people call—or rather mis-call—the flowers "buttercups," though they in no wise resemble the true buttercups.

There are "Butterworts" also growing among the pitcher plants, and blooming at the same time, contrasting, as well as blending harmoniously in yellow of richer, deeper tint. This

bright yellow blossom is *Pinguicula lutea.* So striking is it in color and form that many admirers declare it is seldom equaled in nature. Each flower nods at the summit of a slender stalk rising from a rosette of leaves, flat upon the earth. They are irregular in shape, and each is furnished with a long spur at the base. These two lovely wild flowers are easily cultivated. Like ferns they grow in shade, moisture and spongy leaf mold. Transplant the soil of the woods along with the flowers, and locate their new quarters in partial shade, where it is cool and moist, and the tulips and hyacinths of spring must look to their laurels.

FLOWERS THAT ARE LUMINOUS.

There are few subjects more curious, and none, perhaps, less understood, than the occasional luminosity of certain plants and animals. We do not allude to that phosphorescence which arises from decomposing substances, and which every one must have observed on putrid fish, decaying fungi, and the like; but to those luminous appearances exhibited under peculiar conditions by living structures; as, for example, by the flowers of the marigold, and by the female firefly. The former phenomena are owing to an actual combustion of phosphoric matter in the atmosphere, precisely similar to that which takes place when we rub a stick of phosphorus on the walls of a dark chamber; the latter belong to peculiar states of growth and excitement, and seem at times to be ascribable to electricity, at others to phosphorescence, and not unfrequently to plain optical principles. It must be admitted, however, that not only are the causes but little understood, but that even the appearances themselves are questioned by many, who would resolve the majority of instances on record into more visual delusions. It is, therefore, to little more than a recital of the better authenticated facts that we can as yet direct attention.

Flowers of an orange color, as the marigold and nasturtium, occasionally present a luminous appearance on still, warm even-

ings; this light being either in the form of faint electric sparks, or steadier, like the phosphorescence of the glow-worm. The tuberose has also been observed on sultry evenings, after thunder when the air was highly charged with electric fluid, to emit small scintillations, in great abundance, from such of its flowers as were fading. It is not always the flowers which produce the light, as appears from the following record: "In the garden of the Duke of Buckingham at Stowe, during a storm of thunder and lightning, accompanied by heavy rain, the *leaves* of the flower called *Oenothera macrocarpa,* a bed of which was in the garden immediately opposite the windows of the Manuscript Library, were observed to be brilliantly illuminated by phosphoric light. During the intervals of the flashes of lightning the night was exceedingly dark, and nothing else could be distinguished in the gloom except the bright light upon the leaves of these flowers. The luminous appearance continued uninterruptedly for a considerable length of time, but did not appear to resemble any electric effect." —*Indian Gardening.*

CULTIVATION OF OUR NATIVE PLANTS.

I am sure I have derived more pleasure from "herbaceous plants" than from any other. The herbaceous plants of our woods and fields are in great variety, and, although there are many most beautiful kinds almost exterminated, speaking of the vicinity of this city (Philadelphia), yet there are hundreds of sorts yet to be found, the looking for and the finding names of which would afford great gratification.

It is so common to hear persons say, when viewing some woodland beauty, "How I would like to transplant it to my garden!" While it is true that but few succeed in getting such plants to flourish in their gardens, it is nearly always from lack of knowing how to make them feel at home. Let me mention the Trailing Arbutus, *Epigaea repens,* as an illustration. It is the common be-

lief that this lovely flower cannot be transplanted, and more than once I have corrected writers who have asserted this in public print. I have transplanted it successfully—so have many others. Six summers ago, when in England, I saw a nice patch of it in the Bagshot Nurseries; and many other large nursery firms there offer it for sale. It is not a native there, so that it follows that at some time or other the plants were safely transported from here, seedlings of it being rare. This plant likes shade and moisture and to be undisturbed. It would not thrive in the open garden, but if small, bushy plants with a good ball of earth be taken and set in a woodland where the required conditions exist, they will live and flourish.

With native plants, a little care should be taken to provide for them situations as alike as possible to those they have been accustomed to. There are shade-loving plants and those that have grown in open places. It often happens that a partly shady border is at command, where those that demand it can be placed. It does not always follow that a wild plant is found growing in the best possible place for it. Take, for example, the Scarlet Columbine, found on damp rocks along the Wissahikon (Philadelphia). I have seen better specimens of it in open places in gardens than ever I have seen wild, no doubt because the garden afforded better food than its native rocks did.

To those who have not tried it, it would be a great surprise to find how much better plants grow when the ground about them is well mulched. It makes the plants feel more nearly at home than anything else that could be done, save the giving of shade to some of them. Plants in the woods have shade above them and decaying leaves about them, and those in fields have grass or other plants about them, so that in both places the roots are cool. This is what mulching of the garden plant does, this and the preservation of moisture. Another thing rarely thought of is this. The wild plants in the woods are so covered with forest leaves that

frost does not get to their roots. I am sure that all plants, hardy or not, are the better for this; and I would mulch afresh in the fall, that the roots may have a winter covering. As herbaceous plants will repay good food given them, I would mulch with manure in the fall. Let it be long manure, the better to protect the plants; the strawy portion can be raked off in the spring; the remainder can be left undisturbed. It will be loose, and often it will be sufficient mulching for the surface.—*Meehans' Monthly.*

FAIRY RINGS FORMED BY THE FLOWERING FERNS.

Mr. T. C. Buchheister recently called my attention to the fact that the various species of flowering fern (*Osmunda*) not only produce their fronds in circular crowns, but that the different plants are themselves arranged in larger circles. In a recent trip of several miles through a country where these ferns grow in abundance, I improved the opportunity to put this matter to the test and was surprised to find that the plants are rarely disposed in any other form where the conditions permit them to develop naturally. Walking into a thicket of the plumy fronds, one finds himself surrounded by a fairly regular circle of the plants. So here we have another form of the "fairy ring," if it is permissible to associate such tall and sturdy plants with the fairies.

Dr. Robinson, in *Rhodora,* has noted similar fairy rings in *Lycopodium inundatum* and explains them upon the supposition that the different plants move outward from the centre in search of fresh soil and new food supplies, and so eventually form the circles. This explanation, owing to the way in which the ferns grow, would seem scarcely to answer for the *Osmunda* circles. It is more likely that each is the progeny of a single plant which has given off branches from time to time, all of which moved outward from the place of origin. It was noted that a line through the plants in a clump made an oval rather than circular figure, and it is conjectured that the original plant started at the broad end of

this oval and grew along the major axis directly across the centre of the figure. If this be the correct solution, one has only to consider how very slowly the *Osmundas* move onward each year to realize the great age of a large ring. A hundred years is a very low estimate of the time needed to form one.—*Fern Bulletin.*

NOTE AND COMMENT.

WANTED.—Short notes of interest to the general botanist are always in demand for this department. Our readers are invited to make this the place of publication for their botanical items.

THE DWARF MISTLETOE.—A writer in the *Plant World* notes that the dwarf mistletoe (*Razoumoufskya pusilla*) is still but imperfectly known. The botanies name June as the time at which it blooms, but last spring it was found blooming in late April in the Adirondack Mountains, of New York. Recent explorations have shown that this plant is frequently very abundant in forests of black spruce.

NATURE AND SCIENCE.—"In this age of science let it be remembered that the objects of nature may be viewed in a poetic aspect as well as in a scientific. Asters, willows, butterflies and sparrows serve just as high a purpose when we think of them as symbols as when we study them analytically. Roses exist as much for the purpose of suggesting love, sweetness, youth and purity as for the study of calyx and petals and stamens."—*Among Flowers and Trees With the Poets.*

PINK BLUEBERRIES.—Last August while botanizing near Mt. Pocono, Pennsylvania, Dr. A. A. Angell found a large patch of blueberries which instead of the usual blueberries bore fruit of a bright pink color. This fruit was perfectly ripe and showed no

tendency to ever assume what should be its natural hue. Some specimens sent to me prove the species to be the common dwarf blueberry (*Vaccinium Pennsylvanicum*). Since a rather extended search in the Manuals give no hint that pink berries have been observed in this species, and since this form is better handled by giving it a name, Dr. Angell suggests that it be called *Vaccinium Pennsylvanicum forma rubrum.* In all respects, except color, the form is like the species.—*Willard N. Clute.*

Effect of Environment on Trees.—There is considerable evidence in the acclimatization of trees that the power of environment is very great. A moment's consideration of the powerful influence of a temperate climate on the phases of vegetation is alone sufficient. There are instances which seem to point to the possibility of a new periodicity, without the loss of the old one, being produced by a change of climate. One case of more than usual interest is given where the behavior of *Acacia dealbata,* indigenous to New South Wales, Victoria and Tasmania, has been entirely changed by the climate in the Nilgiris. The facts are, that in 1845 and up to about 1850 the trees in the Nilgiris flowered in October, which corresponded with the Australian time, but about 1860 they were observed to flower in September; in 1870 they flowered in August; in 1878 in July; and in 1882 they began to flower in June, this being the spring month in the Nilgiris, corresponding with October in Australia. It therefore takes nearly 40 years to regain its habit of flowering in the spring, *i.e.*, to become perfectly acclimated. I am also informed that the English oaks now growing at Johannesburg further illustrate this point, since they begin to drop their leaves towards the end of May, remain bare until near the end of August, when new leaf appears, to be followed by flowers which ripen into fruit by Christmas.—*Indian Gardening and Planting.*

EDITORIAL.

There is nothing so worthy of imitation as a good example. In July the *Plant World* inveighed against the use of borrowed articles in the AMERICAN BOTANIST, and in August it calmly runs an extract from *Harper's Magazine* as its leading article. Our contemporary is showing a commendable spirit of emulation.

During the publication of this magazine the editor has been obliged to decline with thanks, many articles that would no doubt have been eagerly accepted by other publications, and depend for suitable material upon the good offices of the mucilage bottle and a pair of shears. Lest it may be thought that original articles are not wanted, we hasten to say that those declined were so disposed of because of their kind and not their quality. We know that in declining these articles we have been an exception among publishers, but we are trying to make this an exceptional magazine. It is perhaps impossible to give directions for writing exactly the kind of articles we want, but we give herewith a few suggestions which may assist those who are trying to reach our mark. First and foremost, then, avoid the categorical style. Just as soon as you fall to enumerating a list of species your article will run dry. Not long ago a popular botanical magazine contained an article with seventeen lines of solid italic, this italic being the names of species. How could they interest the public? It is needless to say that we have no desire for such matter. It is well, also, to drop careful descriptions of stem, leaf and flower unless these are essential to a proper comprehension of the ideas you are trying to convey. What is it in the writings of other writers that has interested you? Is it not what may be called the personal interest, the thoughts and fancies with which certain plants have impressed them? The case is something like that of the honey-bee. In the chalices of certain flowers the nectar lies and she must gather it with infinite labor; but it is not until she has got it home and

transformed it within her own body that she produces the wonderful substance known as honey. So with the writer. He may laboriously gather his facts, but it is not until he has transformed them in his head, worked them over in his mind, will the result flow forth as sweet and wholesome literature. The principal interest of a walk afield is not in plants or birds or beasts as mere objects of natural history, but in the various ways in which these objects minister to our five senses. Music, color, fragrance, gracefulness, the thousand charms that appear in the surroundings of the principal object and the fancies, incidents and associations that they recall—these are the things that interest, and these are the things that should creep into your writings. Suppose you were to try to tell a friend, who had never seen it, just how lovely and beautiful your own part of the world is; would you begin by giving him botanical descriptions? Not a word! Then do not give your friend, the public, different treatment. Botanical detail is all right in its place, but its place is not a popular article. As to the subject matter, the facts you use may not be new, but if clothed in new language may be formed into something that is new. At the same time, it must be said that a new fact, or a new idea suggested by an old fact, is by far the best material with which to begin your labors. Having found your subject, use plain language, which need not be confused with commonplace language, and may success attend you! It is not given to all of us to achieve this end, but none are debarred from making the attempt.

BOOK NEWS.

—Some of the literary journals are commenting with surprise upon the fact that the support that takes the form of orders in advance of publication, has been extremely small in the South for the new book "Southern Wildflowers and Trees." Nearly all the advance orders have come from Northern booksellers. The reason for this is assumed to be that the people of the Northern States are most likely to need such a book and to buy it to carry with it

during trips to the South. To us, however, the real reason seems to be in another direction. It is well known that the people of the South do not take kindly to botany and the allied sciences and the publishers of most scientific journals can testify to the rarity of subscribers south of Virginia and Ohio. In a land where nature has done her utmost for the botanist, it is surprising to find so few devoted to the study of plants. The botanists of the South can almost be counted upon one's fingers. Whether this condition is due to the climate, the lack of time or the lack of proper facilities for study among the people is a subject worthy further investigation.

—The production of poetry relating to nature has kept pace with the prose matter upon the same subject, but being printed in various books of verse and in the larger magazines rather than in the scientific journals much of it has escaped the notice of the flower lover. It is therefore with much satisfaction that we note the appearance of "Among Flowers and Trees With the Poets," a compilation of such verse, by Wait and Leonard. It is especially strong in recent verse and will save the lover of the poetry of flowers much laborious search in the periodicals. At the same time the best of the poems by older poets are included. The matter is arranged under six heads: Flowers in general, flowers specified, trees and shrubs in general, trees and shrubs specified, flowerless plants and national flowers. There are also two appendixes relating to floral symbolism and flowers of the months. The verses under each head are arranged alphabetically, which further adds to the utility of the work. The authors appear to have been very successful in their task of compilation and one is surprised at the number of poems concerning different species. The rose, violet and lily no longer receive all the homage of the verse-makers. The book contains 415 pages, is tastefully bound in blue and gold and is published by Lee & Shepard, Boston.

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AN EXPERT OPINION.

Turning away from the flying and creeping things of the earth and from the snap-shot methods necessary to portray their life, a feeling of coolness and repose comes to us from between the leaves of "Our Ferns in their Haunts." Last week, driving on the Parkman road, near the head of Lake George, we watered the horse at a barrel, fed from a spring on the hillside by the hollowed-out half of a tree-trunk. We climbed the slope above it and gathered quantities of ferns, differing, while the horse jogged on again, as to whether this or the florist's delicate pet was the real "maidenhair." There was no untechnical book in our collection, nor did we know of any in which we could "look it up." The next mail brought this book. It opened to a pen-and-ink sketch of what looked like our drinking place. Further on in the book we found—was it the very clump from which our ferns had been taken? It might have been, for the surroundings seemed identical. Our questions were answered, as were several others, and we were given a digestible morsel of science with a salad of maidenhair folk-lore, all served up in the best of descriptive English. The make up of the book is admirable. The colored plates, wash drawings and pen-and-ink sketches are artistic and at the same time accurate in detail, and the bits of quoted verse and folk-lore are as attractive as the illustrations.—*Literary Collector.*

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THE AMERICAN BOTANIST

VOL. I. NOVEMBER, 1901. No. 5

THE INDIAN PIPE.

BY ERNEST WATERS VICKERS.

In one of my October strolls while filling my pockets with nuts and my heart with the glories which flee so speedily away, I came upon three little brothers of the spectral pipe. Not since my walks in the August woods on pilgrimages to a certain bank of ferns in an opening where the gorgeous plume of a purple-fringed orchid formed the shrine, had I seen this interesting flower.

This is the pow-wow pipe of my vocabulary—of purest, waxiest white, with a feeble salmon fire in the bowl. Pow-wow pipe rather as if nature had in mind the vanishing of the Red man when she placed this as a memorial in her wild garden. If any plant seems the product of enchantment it is this. At first glance it strikes the beholder as a fungus which has the gift of bloom. What experiences has it passed through that it should be turned gray, or what has it seen in the dark watches of the night that its chlorophyll should run white in its veins?

The witches of old Salem must have known and fondled it out on the needle carpets of the hemlock and pine shadowed woods, and I think it must have been in Hawthorne's enchanted forests where little Pearl played by the brook. It was born and bred in shadows deep where no health-giving, life-getting sunbeams fell. Yet it has a strange secret or retained sort of pleasant odor saved from better days, as though it had struggled to be a perfect flower and not this abortive uncanny thing. Circumstances were too much for it; but it is to be loved for what it is, a

perfect, living flower modeled in wax by nature's own hand, and so delicate that after a few days it withers away in blackness.

I sometimes wonder what European folk-lore would have done with my pow-wow pipe had it smouldered in her realm. Someone has proposed the name "Pipe of Henry Hudson's crew" for it. Dead man's finger and corpse plant are unfit names for it and seem to have been given to it by those utterly devoid of fancy or reason.

SOME ABNORMAL FLOWERS.

By J. L. Sheldon.

Several specimens of roses were brought into the laboratory last spring as curiosities, on account of the abnormal development of the flowers. It was learned afterwards that they were rather common on a few bushes about town. Instead of the usual manner of blossoming, a second bud grew up out of the center of the flowers and finally opened like the first. The second flower was complete, as far as calyx and petals were concerned. A shoot is sometimes produced from the center of a flower instead of a bud, and instances might be mentioned where a bunch of flowers were also produced at the end of the shoot.

The "twinning" of peaches was also very common the past year. In some cases scarcely a single peach could be found on some trees, and as many as three or four were often found grown together, usually only one ripened, however, the extra ones "blasting" and falling off.

In an English work by Masters, which is becoming rare, there are good illustrations and descriptions of the abnormal development of the various parts of plants. One who is interested in this sort of thing can usually find plenty of examples without much trouble. The common double china pinks often show a succession of two or more blossoms in the same calyx. One blossom has hardly passed by before another crowds into its place.

Two bunches of blossoms are sometimes produced on the horse-shoe geraniums, the one growing out of the other.

While abnormalities are of no special scientific value, they attract the attention of almost every one on account of their oddness.

Lincoln, Nebraska.

THE GRAPE FRUIT.

By Willard N. Clute.

Although the grape fruit is still comparatively unknown outside of the larger cities and towns, it is apparently rapidly increasing in favor with the American people. Last year the Island of Jamaica alone sent nearly thirty thousand dollars' worth of this fruit to our markets. In its season grape fruit may now be obtained at almost any large fruit store.

Notwithstanding its name this fruit in no way resembles the grape. One authority has it that the name is derived "from the size and shape of the globules containing the pulp," but since the interior construction of the grape fruit is exactly like that of the orange, this derivation seems scarcely likely. Americans seem generally to think that the name is given because of the flavor of the fruit, although this has but a faint resemblance to that of any grape with which I am acquainted.

The grape fruit is a member of the orange family, being regarded as a variety of the pomelo or shaddock (*Citrus decumana*). There seems to be some question as to which variety is the real *citrus decumana*. There is a noticeable difference in shape; the grape fruit appearing like a very large, light-colored orange, while the shaddock is still larger and pear-shaped, with a thicker rind and coarser grain. In fruit the shaddock is an interesting sight. If one can imagine a medium sized apple tree hung with pear-shaped fruit as large as small melons he will have a very good idea of what it is like.

In the United States the grape fruit is usually prepared for the

table by removing both the outer rind and the paper membrane surrounding the sections of pulp. This membrane usually has a bitter flavor not acceptable to most palates. In the home of the grape fruit they treat the fruit in a different way. It is first cut in half across the sections, or "pegs" as they are called, then the centre where the sections come together is cut away and some sugar put in the cavity, the pulp is next loosened from the sections with a fork and finally it is conveyed to the mouth with a spoon. In this way one gets the full flavor of the fruit and at the same time avoids the bitter taste of the other parts.

THE RINGS OF TREES.

Every tree has its life history securely locked up in its heart. Each year of its growth a thin ring of wood is formed next to the bark and a corresponding layer of bark adjoining it. As the tree swells and swells the bark is forced outward and splits into wide fissures. Much of it falls off altogether, but each ring of wood remains a faithful record of the year in which it was formed. When the axe or saw of the woodman ends the life of the tree and brings its body crashing to the earth this record is unrolled before us, and by it we can determine almost every incident in the life and growth of the tree.

Trees as well as human beings have their period of struggle and hardship, their prosperous times, their terrible misfortunes and hairbreadth escapes, their injuries, and recoveries; their complete submergence in a struggle in which the odds were too great for their feeble strength to cope with.

Here is a sturdy oak, whose tale revealed is that of steady perserverance in the face of difficulties—a slow, gradual growth, never checked, never daunted, till the final goal is reached and it stands supreme, literally monarch of all it surveys.

Here is a mighty spruce which has a tale of perseverance, but of a different sort. The oak conquers by force of character,

by its fighting qualities. The spruce succeeds by its ability to endure. It is like the patient Jew, frugal living on what would be starvation to others, till when their day of strength is past, and sudden disaster overtakes them, he enters into his inheritance and prospers amazingly.

See the record of this spruce—fifty, sixty, seventy years, each represented by a ring so small that it takes great care to distinguish them at all, and the whole seventy do not occupy the space of three inches at the heart of the tree. What a tale of hardship this sets forth. Other trees have pre-empted the light in which the existence of a tree depends. The poor spruce must be content with the twilight that filters through the branches of its enemies, the poplar, birch and pine. But it is content. It knows that the young poplars or pine spring up beside it in the shade they could not endure, but would quickly die. It knows that the time will come when old age or disease will weaken the poplars or perhaps a heavy wind will lay them low, and the spruce, old in years but insignificant in stature, will escape injury, and still young in vitality, will soon spring ahead in the race. Now see its rings—it has made as much growth in ten years as in the preceding seventy, and soon becomes a large tree.

What does the stump of this old white pine teach us? Evidently something extraordinary has happened to it, for way in near the heart a black scar runs around the edge of one of the annual rings for nearly one-fourth of its circumference, and outside of this the rings are no longer complete, but have their edges turned in against the face of this scar. Each subsequent ring reaches further across it. By the time they have met in the centre many years have elapsed and there is a deep fissure where the scar once existed. But the later rings have bridged the gap and, growing thicker in the depression, soon fill up the circumference of the tree to its natural roundness, leaving no sign of the old wood. What happened to the tree? While it was still young its mortal enemy, the forest fire, swept through the woods, de-

stroying most of its companions and burning a large strip of the tender bark on its exposed side so that the bark died and fell off. But being better protected than the other and having still three-fourths of its bark left uninjured, it soon recovered and its stump reveals how successfully it strove to heal the wood and grow to maturity to perpetuate its species.—*American Gardening.*

COCOA AND CHOCOLATE.

In Trinidad little is known about the preparation of the article known as "Cocoa" as sold upon the English market. The word "Cocoa" is a corruption of the Spanish word "Cacao," and had its origin in European markets. It is used to denote preparations of the Cacao bean in powder, sweetened or unsweetened as "Cadbury's Cocoa," "Rowntrees' Cocoa," "Vi-Cocoa," etc., etc. Such powders are seldom prepared in the countries where Cacao grows, the article known as chocolate being almost exclusively used in preference, except by Europeans who have become accustomed to the preparations of their own countries, for whom a certain quantity is imported. In Trinidad a considerable quantity of "chocolate" is made for local consumption. The word "chocolate" is said to be of Mexican origin, and covers preparations from the Cacao bean which solidify on cooling into cakes or bricks or other moulded forms.

We have, therefore, two names which cover preparations made from Cacao beans, produced by the tree known as *Theobroma Cacao L.*

Chocolate is made from the Cacao bean roasted and ground to a paste, which hardens on cooling. This may be made sweetened, or unsweetened, and as much as 40 to 60 per cent. of sugar is added when made into confectionery, but less when intended to be used for making a beverage. The paste may be made either by hand on a flat piece of freestone, or it may be ground in mills constructed for the purpose. The chief hardening ingredient is the fatty matter the beans contain, known as cacao fat and used

largely *in* medical dispensaries. *Cocoa* is the name given to a product of the Cacao bean, the preparation of which is commenced in the same way as the manufacture of chocolate; in fact, cocoa is nothing more and nothing less than "chocolate" with the cacao fat taken out, which prevents its solidifying into cakes.

All operations in connection with Cacao preparations have to be carried out at a temperature not less than 85 degrees Fahr. to keep the fat melted. Even at this temperature the fat will harden, but the manipulation generally increases the temperature sufficiently to keep the fat fluid. When the roasted bean has been ground into a fine fluid pasty mass, the fat may be taken out by placing it in thin layers in linen cloths, and placing these in tiers in a suitable press. For this work it is better that the temperature should be as high as 90 degrees Fahr. or over, as the melted fat will flow the more freely. The fat comes away readily, but contains Cacao red, the coloring matter of the bean, and some small portions of the solid matters of the paste. If the fat be at once filtered through animal charcoal in a water oven, it will on cooling be perfectly white and clean. The residue which remains behind in the cloths—or the "press cakes"—should now be removed. These are easily broken under slight pressure and may be rubbed through a fine gauze sieve, the resultant powder being the "Cocoa Powder" of commerce.—*Bulletin of the Trinidad Botanical Department.*

DOUBLE FLOWERS.

It is still a mystery as to what is the immediate influence upon plants which causes flowers to become "double." The commonest case is to have a substitution of petals for stamens and carpels, coupled with a multiplication of the number. Thus a stock ought to have only four petals, six stamens, and two carpels, but there may be more than fifty petals in a double flower.

Various kinds of doubling may occur. It may begin and end in the bracts, as in the wheat-eared carnation, the flowers of

which consist of nothing but a constant repetition of the opposite pairs of bracts at the base of the calyx. A calyx may be repeated over and over again, the corolla being entirely suppressed. This has occurred in several plants, as larkspur, foxglove, veronicas, etc. With regard to the corolla, a second and a third may be formed one within the other, as in campanulas. In these stamens and pistil may remain unchanged.

When stamens are about to become "petaloid," the anther may have one cell in the form of a flat little petal. Though there is no real explanation of its occurrence, it may clear our notions to try and express what takes place somewhat as follows. Nature has divided the vital energies of a plant into several departments, and different supplies of energy have been, as it were, told off to undertake certain duties. Thus "vegetative" energy makes leaves. Other energies make sepals, petals, stamens, and carpels respectively; but from some unknown causes, they may invade one another's departments. Hence occurs a struggle in the structure of an organ under two different energies. All we can say is that to produce this, it is due to some "affection" we cannot account for; but it is apparently caused by some external influence from the soil or elsewhere. As an interesting example, when Mr. Heal was raising new greenhouse rhododendrons for Messrs. Veitch, he noticed a hybrid with anther petaloid on a truss of flowers. He pollinated that flower with pollen from its own stamens. The result was fifteen seedlings, and all were double or semi-double; from this origin arose the "Balsamifloral" section of the East Indian rhododendrons. The "affection" thus started proved, therefore, to be hereditary.

"Doubling," to which several series of parts of the same kind occur in successive whorls or continuous spirals, must not be confounded with a multiplication in the number of parts in each whorl. This often occurs, as in a corymb of elder flowers, among which flowers in "sixes" may often be found as well as the normal ones in "fives," just as a Crocus or Daffodil may be in

fours, and orchids often in twos. In increasing the number, we assume hypertrophy to be the cause, just as atrophy probably accounts for the decrease.—*The Garden.*

WHY DEAD NETTLE.

One of the commonest plants in English hedgerows is the stinging nettle, and pedestrians are constantly striking their hands against the irritating weed to their cost. Anent this fact, I received while in England last summer a lesson in the origin of common plant names. A country boy with whom I was one day in company, was asked the name of a certain plant in the hedge. It looked like a nettle, and a nettle he replied. Being told to touch it and see, he very naturally declined, but on further urging, he finally fingered the leaves, at first very gingerly and then more firmly, and to his surprise received no hurt. Then it was explained that this plant was not a nettle, but quite a different weed (*Lamium album*) which looks almost exactly like it and grows frequently side by side with it, but because this has no stings, the name of dead nettle has been given it.—*C. F. Saunders.*

THE COLUMBINE VISITORS.

In the *Botanical Gazette* for October, J. Schneck has the following regarding the insect visitors of our common wild columbine (*Aquilegia Canadensis*) and the garden species most frequent in cultivation: "The form and distribution of the spurs is quite different in the two species. In *A. Canadensis* the spurs are straight, while in *A. vulgaris* the outer end is curved inward until it is again bent back on itself, forming an entire ring or circle. In *A. Canadensis* the spurs are longer and more slender and the tissues more tender. In both the nectary is located in the outer end of the spur, where it is represented by a hard nodule or gland. The common ruby-throated humming bird (*Trochilus colubris*) the *tobacco and tomato sphinx moths* (*Macrosila Carolina* and *M. 5-maculata*) are common visitors to *A. Canadensis,*

but I have never seen them visit *A. vulgaris*. They take nectar by inserting the bill or tongue into the hollow of the spur while the flower is still hanging in the inverted position. * * * In both species, the Virginia carpenter bee (*Xyocopa Virginica*) and a small bee (*Odynerus foraminatus*) slit the tube of the spur and take the nectar direct from the gland. Later the honey bee (*Apis mellifica*) and a green bee (*Agapostemon radiatus*) enter these slits and secure the remaining nectar, but they do not make new slits for themselves."

THE BITTERSWEET.

An unkempt country lane in autumn is one of the most picturesque of sights, and offers much entertainment to one who has a taste for enjoyment on a low key—to use John Burroughs' phrase. Among the Schuylkill hills there are many such pleasant lanes, half hiding between stone walls and fences that are buried in clambering vines, now skirting woodland or orchard, now winding up hill and along the ridges by cornfield and turnip patches, and now descending into little dales that carry in their laps brawling streams to feed the river.

In such places, these October days, we find the climbing bittersweet in abundance. This characteristic American vine, which dearly loves to climb a tree, is shyness itself in spring and summer; its flowers are so unassuming that they are rarely ever observed, and its foliage is of so conventional a pattern that it passes equally unnoticed in the general green livery of the wayside. But suddenly in the fall it flames upon our startled sight with showy bunches of orange-colored berries, which after a hard frost burst open and glow yet more ardently because of the fiery red-coated seeds which are within. Bittersweet berries retain their brightness indoors for months, particularly if gathered unopened before the frost touches them, and are among the most cherished of decorations in some rural homes. The vine is a famous contortionist, and often twists and doubles upon itself to a remarkable degree.—*C. F. Saunders in Philadelphia Record.*

NOTE AND COMMENT.

Wanted.—Short notes of interest to the general botanist are always in demand for this department. Our readers are invited to make this the place of publication for their botanical items.

Coffee-Leaf Tea.—It is possible that the leaves of the coffee tree will one day become marketable. A chemical analysis shows that the leaf contains all the characteristic properties of the berry, but is richer in theine. The natives of Sumatra make a drink from these leaves, and Europeans who, presumbably, have tried it on their own account, declare the coffee-leaf tea to be a pleasant and refreshing beverage.

The Bramble.—The common wild blackberry in England is *Rubus fruiticosus*, as named by Linnaeus, and it is as fond of living in a hedge as is a gypsy. Its blossoms are as often pink as white and have somewhat the look of raspberry flowers. They appear first when summer is well advanced, and the fruit is ripened all through the autumn. Country folk usually know the plant as the bramble—a name imperishable, for was it not into a bramble bush that the wondrous wise man of the nursery rhyme fell and scratched out both his eyes?—*S.*

Canker-Worm and Slippery Elm.—The past spring the elm trees on our streets here were entirely stripped of foliage by the Spring canker-worm. In some places the worms were so thick on the sidewalks that people had to go out in the road to get by them. I noticed on some streets where there were a few slippery elms that the worms skipped them entirely, or in a few cases it looked as if they had started on a few leaves and found them not to their taste. I could not find a slippery elm in town that was eaten to any extent. Is it generally understood that they dislike this tree?—*Walter M. Buswell, Charelstown, N. H.*

White Blueberries.—Apropos of the paragraph about pink blueberries in the October number of this magazine, it is interesting to note that in the November number of *Rhodora*, Mr. Walter Deane has described and named several white fruited varieties of the blueberry. The white berried form of *Vaccinium Pennsylvanicum* is named *leucocarpum* and that of *V. Canadense*, *chiococum*. The commn high bush blueberry (*V. corymbosom*) already has a black fruited variety known as *atrococcum*, so that albino forms of this will now be known as *V. corymbosum atrococcum leucoccum*.

Antidote for Ivy Poisoning.—I believe in proving all things in order that we may cleave to those which are good and when I saw the reiteration of the statement made in *Popular Science*, I resolved to bring the matter to a test by experiencing ivy poisoning for myself. Consequently I am a wiser if not sadder man. The ivy poison "took," as the doctors would say beautifully. Two days after the application of "Rhus tox" the eruptions together with the suffering, commenced. For two days I employed juice of the wild balsam or jewel weed (*Impatiens fulva*), but the state of my arm grew steadily worse. Then I gave over the experiment, satisfied of the mythology of the remedy, and used camphorated sweet oil and extract of witch hazel, which were effective.—*E. W. V.*

Poisonous Garden Plants.—Among the garden plants commonly in vogue which possess a poisonous nature botanists mention the Jonquil, white Hyacinth, the Snowdrop, the Narcissus being also particularly deadly, so much so, indeed, that to chew a small scrap of one of the bulbs may result fatally, while the juice of the leaves is an emetic. The berries of the yews have killed many persons; and it is pretty well known nowadays that it is not safe to eat many peach pips or cherry kernels at once. The lobelias are very dangerous, their juice if swallowed, producing

vomiting and giddiness, with pains in the head. Lady's slipper poisons in the same way as does poison ivy. The bulbs seem to be the most harmful. Lilies of the valley are also as much so. There is enough opium in red poppies to do mischief; and the autumn crocus, if the blossoms are chewed, causes vomiting and purging. The leaves and flowers of the oleander are deadly, and the bark of the catalpa tree is very mischievous.—*Indian Gardening and Planting.*

Origin of the Cocoa Palm.—It has always been a question whether our familiar cocoanut is the fruit of a species of palm (*Cocos nusifera*) native to the warmer parts of this continent, or whether it was introduced by the early Spanish explorers from islands in the Pacific ocean. Opinion has frequently leaned in favor of its introduction by the Spanish; but in a recent contribution from the United States National Herbarium, Mr. O. F. Cook insists upon its American origin. In defense of his argument he cites among other facts that the whole family of plants to which the cocoa palm belongs, consisting of about twenty genera and two hundred species, are, with the single exception of the African oil palm (*Elacis guineensis*), of American origin. Mr. Cook conjectures that the original home of the cocoanut was in some of the sheltered valleys of the equatorial Andes, where elevation moderated and equalized the temperature and the volcanic soil furnished the alkalinity which the species apparently finds congenial on the seashore, and which it is unable to obtain in inland localities having a heavy rainfall. The cocoanut is said to resemble the date palm in this preference for alkaline soils, but differs in being much more sensitive to extremes of temperature. Apropos of this last statement it may be noted that the inhabitants of the West Indies have a saying that to come to the best, the cocoanut must grow "with its roots in water and its crown in fire."

EDITORIAL.

Of the many interesting customs and superstitions brought to Louisiana by the multitudes of her people who came from Southern and Central Europe, one of the most charming that still persists in the city of New Orleans is connected with All Saints' Day, the first of November. This is the great Autumn holiday upon which the entire population turns out to do honor to its dead, and surpasses even Thanksgiving Day in importance. From sunrise until nightfall every cemetery is thronged with people intent upon "visiting the dead," as the phrase is. In communities where earth burial is the rule, this term would have less of significance; but here, where water is encountered anywhere eighteen inches beneath the surface, all but the poorest are entombed in temple-like structures of brick, granite or marble, and the cemetery is literally "a city of the dead." As may be expected, flowers play an important part in the ceremonies of All Saints' Day; in fact, it is the principal part. Bouquets, wreaths and more elaborate pieces almost cover the entrance to each tomb. No one considers himself too poor to afford at least a few flowers to lay at the tomb of those of his family who have gone before. Roses, chrysanthemums, dahlias and various Autumn flowers are seen in profusion, but mingled with the others are many set pieces composed of artificial flowers. As a whole the day reminds one of our Northern Decoration Day, but with a strain of solemnity running through it not observable in the Northern holiday.

It is not an uncommon belief among followers of the natural sciences, that anyone capable of perceiving a new fact is equally capable of setting forth in print his ideas upon the subject. As a result, many of the scientific journals, while filled with the most interesting facts, are exceedingly dry reading, because of the way in which the facts are presented. In his recent address before the Botanical Society of America, Dr. B. L. Robinson, the retiring

president, touched upon this subject in the following pertinent words: "In this matter of presentation, the natural sciences seem to be at a peculiar disadvantage. In belles-lettres a work of crude literary form is damned. Authors, if they would be read, must cultivate a good style. But in the natural sciences, if a work only presents some new and valuable facts, it must, in spite of the crudest form, be purchased, read, reviewed, quoted, and the author is often flattered by the seeming success of a paper which may have been little better than an imposition upon his colleagues. Some improvement may undoubtedly be accomplished if the scientific public, especially editors and reviewers, can be stirred to a more critical attitude toward work defective in form. But important advance can only emanate from the authors themselves. They should take a greater pride in the style of their publications, should realize that lucidity of expression goes far to carry conviction, while obscurity is positive injustice to their co-workers."

BOOKS AND WRITERS.

—The Macmillan Company will soon issue "Old-Time Gardens," by Alice M. Earle.

—"Woodland and Meadow," by W. I. L. Adams, is to be published by the Baker & Taylor Company, New York.

—A book on "Forest Trees and Forest Scenery," by G. Fred Schwarz, has just been issued by the Grafton Press, of New York.

—Beginning with the January number, *The Bryologist* will change from a quarterly to a bi-monthly. The subscription price remains unchanged.

—A new book on Forest Trees, by Julia Rogers, of Cornell University, is announced for publication about January 1st. It will be illustrated by many drawings besides numerous photogravures of specimen trees.

—At last we have a book upon Southern wildflowers that the ordinary flower-lover can understand, and one that will enable

him to identify most of the noticeable plants of the South with little trouble. It is entitled, "Southern Wildflowers and Trees," the text being by Alice Lounsberry and the many illustrations, both in black and white and in color, by Mrs. Ellis Rowan. This volume is third in a series in which artist and writer have joined forces, and in several respects is a considerable improvement upon those that have gone before. This is especially noticeable in the arrangement of the book, the thousand or more plants described being grouped in families and placed according to plant relationships. There is also a key to the families, based upon scientific principles, which ought to be of great assistance to the student in obtaining the names of his specimens. The illustrations are excellent and the artist, already well known, seems to have improved upon her earlier work. In the text each species is described in accurate botanical terms and its range and time of blooming given. Then usually follows more or less matter of an untechnical nature, which sets forth the uses, habits and folklore of the plants. In this part of the book, the author has been exceedingly unfortunate in construction, and it is safe to say that the book contains more involved specimens of English than have been given to the public in many a day. The nomenclature follows the most radical rules and is sure to be a stumbling block to all who have studied Southern plants by the manuals now in existence. The author has also fallen into the error of trying to make a common name for each plant where none existed. Such names as "Miss Vail's Haw," and "Addison Brown's Clematis" are scarcely likely to find acceptance among plant-lovers. With all its defects, however, this book will serve all the purposes of the Southern botanizer and we cordially recommend it to those living in the United States south of Virginia. The book contains more than 500 octavo pages, is well bound and is published by the F. A. Stokes Co., New York, at $3.65.

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THE AMERICAN BOTANIST

VOL. I. DECEMBER, 1901. No. 6

THE WANING YEAR IN THE SOUTH.

BY WILLARD N. CLUTE.

The frost is the magic dye-stuff with which Nature colors the garments of Autumn. The brilliant hues that crowd the green out of our Northern forests, late in the year, are rarely seen in regions unconquered by the cold. In our country they extend south, however, much farther than many imagine. The inhabitants of the New England and Middle States are likely to think of the Gulf States as the land of continued sunshine and flowers, but even these States know the sensations that come from freezing temperatures and flurries of snow. Their Autumn is not so unlike a Northern Autumn, except that it is slower in coming and more deliberate in passing. It is usually late in November before the brightest tints are assumed.

Although many districts lack that pride of Northern forests, the red maple, its place in the color scheme is not vacant. The sweet gum rather more than makes up for the loss. Its starry leaves put on many tints of scarlet and maroon that the maple cannot reach. And the sour gum (*Nyssa*) displays the same vivid coloring that makes it so attractive in the North. I do not know whether the oaks are more brilliantly colored here than further north, or whether they merely appear so against a background of dark green pines. At any rate, they are most conspicuous in various shades of red, yellow and bronze. There is, however, one remarkable exception to this in the live oak, which in these scenes of change and decay remains clothed in living green—a truly *live* oak.

The more I see of the live oak, the more I find to admire in it. The long sweeping strands of gray "Spanish moss" with which it is always ornamented, gives it a venerable appearance and a solemnity not found in other trees. Its short massive trunk and long level branches are not in the least like the airy gracefulness of the elm, and yet I find myself often associating them, mentally. Both have a sort of brooding, sheltering air that make them ideal trees for planting near dwellings. I do not know of a nobler object in Nature than an ancient live oak. One marvels at the sight of perfectly horizontal branches fifty feet in length.

A close rival of the oaks in effective coloring is that counterpart of the tamarack in Southern swamps, the bald cypress (*Taxodium distychum*). Like its northern ally it insists upon its little nap in winter and prepares for the event by dropping its leaves, becoming bald indeed. Before the leaves fall they turn to a fine reddish bronze that for some time spreads a pleasant light through its swampy retreats and blends harmoniously with the yellows of the ever abundant poison ivy.

There are a few dashes of color in the Southern Autumn not given by the leaves. That form of fruit, the berry, so abundant in the North, seems here to give way largely to the seed cup; at least I have been struck by the absence of berries in the thickets. But one must not overlook the dark shining berries of the cat brier (*Smilax*), whose prickly stems festoon the leafless shubbery by the wayside; nor can he omit the crimson fruits that cover the branches of the winterberry (*Ilex*) in moist places. The flowering dogwood (*Cornus*) is usually abundant also, and more heavily fruited, at least this year, than I have ever seen it in the North. There is still another berry, which, while it does not lend a special note to the landscape, may well be mentioned in this connection. I refer to the May-pop. Here and there swinging in the sunny thickets one sees this great berry, the size of a hen's egg or larger, still hanging on the vines. From these evidences it is easy to construct the Summer scene, and one imagines the glorious

blossoms of the passion flower in place of these yellowing fruits. In the list of economic products these fruits have no importance, but children are fond of them and they rarely go ungathered. The construction of the fruit reminds one of the fruit of the mandrake or May-apple. The seeds are surrounded by a thin pulp and much juice. Only this juice and pulp is eaten. It is quite pleasant to the taste, being sweet and with a spicy flavor, reminding one strongly of its tropical relative, the grenadilla. It may be queried in passing why this fruit which ripens in Autumn should be called the *May*-pop.

Even in the South there are many trees that drop their leaves in Autumn, and not a few that do so without a suggestion of bright colors—with no last lingering contribution to the gorgeous pageant that is passing. The time for their winter's sleep having come, they begin it quietly and without ceremony, as a hibernating animal might go into its winter quarters. As the brown leaves fall a world within a world is revealed, for high among the leafless branches are great numbers of trim round tufts of mistletoe. These balls of green in the treetops give the deciduous forests a curious appearance in winter. All summer long they have flourished unnoticed, but now the golden green of their foliage is conspicuous enough to constantly remind one of the approaching holidays.

While the mistletoe flaunts its colors from its elevated perch the shining prickly leaves of the holly are to be seen nearer the earth. In fact, the underwood seems scarcely to have changed color. There is life welling up from the warm moist earth that the frost cannot overcome. Many plants, it is true, are leafless and dead; but these finished their work long before chilly nights came, and dropped their leaves without a hint from the frost. The palmetto still shows in lush green thickets over millions of acres of swamp land and a multitude of other green things occur whose leaves give the stranger botanizer no clue to their families or relationships, and so cannot be mentioned here.

Thus Autumn fares in the State of Mississippi, but as one

continues southward into Louisiana a gradual change in landscape and temperature makes him begin to distrust his calendar. A soft warm breeze comes up from the Gulf; men are at work in the fields setting out lettuce and cabbage plants or planting seeds of radishes and other hardy vegetables in full expectation that the coming weeks will bring them full crops, and in the gardens the violets are blooming again. Surely this is more like spring as the Northerner knows it!

The second blooming of the violets is especially interesting. The scientist is inclined to fancy the petal-less or cleistogamous flowers to differ in some essential particular from the showy ones; but the behavior of the plants here show plainly that each kind of flower is merely the result of a different temperature. During the cooler parts of the year the showy flowers are produced, but as the heat increases the flowers begin to dispense with petals and thus the apetalous flowers are found. The common blue violet of the North has this same trait. The Northern Autumn, however, is too short to permit much of a show of flowers at that season. At the North, Winter and Summer separate the violet's season of bloom into two seasons; here Winter is powerless and the flowers appear throughout the Winter months and far into Spring.

The flowers in the wild lands have now about gone. It is somewhat exasperating to the flower lover to come upon woods and fields that can bloom but will not. This is just the weather that in the Northern States would give us hepaticas, blood-root, anemones and trilliums, but here Nature makes no sign. She rests if she does not sleep—no doubt she dozes in January. In marked contrast to the country side the lawns and gardens of the cities show scarcely any diminution of bloom. One of the chief glories of the Autumn days has been the flowers of the *Cosmos*, a bushy annual of the sunflower family, six feet or more high, that from October until mid-December or later is covered with a profusion of flowers the size of a silver dollar. The prevailing color is orange, but there are many shades of purple and white.

Even more conspicuous is the *Poinsettia*, whose great flowering bracts have lately taken on the most vivid scarlet tints and now fairly dazzle the eye. The *Lantana* bushes are still covered with yellow and orange bloom and chrysanthemums are plenty. But the roses, ah, the roses! Truly the rose is queen of flowers and reigns here undisputed. Such flowers as scent the air even in small gardens can be found in the North only in the most favored greenhouses. So long as one may stroll among such blossoms there is no need to sigh for the departure of Summer.

THE WANDERINGS OF ALFALFA.

Talk about blue blood; that would be a proud member of the Four Hundred who could trace his lineage back as far as can a certain cousin to the clovers that may occasionally be picked on our lawns and vacant lots and by the roadside. This scion of an ancient race is alfalfa, which is clover-like in foliage and flower, but the blossoms are blue. Twenty-five centuries and more ago, when Athens was the hub of the universe and all the outer world was considered barbarian by the Greeks, alfalfa dwelt unostentatiously in the valleys of that part of Western Asia inhabited by the Medes and Persians. When the wars arose between those people and the Grecians, and Darius made his famous expeditions into Greece, our little plant appears to have gone along. Perhaps its seeds were transported by accident in the camp baggage of the Persian hordes, or possibly some enterprising Greek prisoner escaping from Media, brought seeds home with him and established the culture of the plant in his native country. At any rate, into Greece it came about five centuries before Christ, and doubtless helped to make Alexander's charger Bucephalus the horse he was. When Greece became absorbed into the Roman Empire, alfalfa won the favor of the conquerors, who cultivated it extensively for fodder, for their army horses, and introduced its culture into Italy. The poet Virgil mentions the plant in the Georgies under the name of Medica—a word which in spite of

its looks has nothing etymologically to do with medicine, but simply means the herb from Media.

From Italy its culture spread northward into Middle Europe, and westward into Spain. It was in the latter country that the name alfalfa, an Arabic term, became attached to it, indicating that it was under cultivation in the Spanish peninsula at the time of the Moorish occupation.

When Spain extended her sovereignty across the Atlantic a new world was opened for alfalfa to conquer, and it made good use of the opportunity, establishing itself as a blessing in the bloody trail of devastation which the Spanish conquistadors of the sixteenth century left behind them in Mexico and Peru. In arid regions, where no succulent grass would grow, and where clover would wither away, the alfalfa was sown, and by reason of its great length of root, which enables it to draw moisture from a great depth, flourished and increased. Down the South American coast it made its way as far as Chile, and from that country it was brought to California a few years after the admission of the Golden State to the Union. Thence its fame as a valuable hay plant possible of growth in the dry lands traveled throughout the West, until now it is the staple fodder crop on the Pacific coast and in the Rocky Mountain region, from Montana to the Gulf of Mexico. In Pennsylvania the abundance of other fodder plants has tended to keep the virtues of the alfalfa in the background, but in New York State it has been more or less cultivated for many years.—*C. F. Saunders in Philadelphia Record.*

HOW SOME SEEDS ARE PLANTED.

Examine a fruit of the common Dog Violet. It is a little capsule formed of three sections. As it ripens it opens along the lines of junction of these, and we get three narrow boat-shaped valves spreading horizontally from the fruit-stem, and each containing several seeds. The drying of these valves causes contraction. The two gunwales, so to speak, of each boat are drawn together, pressing more and more tightly on the seeds which lie

between, till one by one the seeds spring out with considerable force.

Some of the Crane's-bills fling their seeds to a considerable distance by means of a more complicated apparatus. The fruit consists of five separate carpels attached by their apices to a spindle. Each carpel consists of an egg-shaped pouch containing one seed, prolonged into a slender rod, the whole adpressed to the spindle, so that the five pouches lie in a ring round its base. Each pouch is open on the side which is pressed against the spindle. As the fruit ripens, the more rapid shrinking of the outer layers of the rod of the carpel causes it to rupture the tissue which attaches it by its whole length to the spindle, and it curls with a jerk, carrying up the pouch, and causing the seed to fly out of the opening on its inner side already referred to. Lord Avebury placed fruits of the Herb Robert on his billiard table, and found that the seeds were in this manner projected to a distance of over twenty feet. Fruits of this kind have been aptly named sling-fruits. Nor is it beyond the powers of certain species to undertake even the planting of their seeds.

The Stork's-bills (*Erodium*), which are closely allied to the Crane's-bills or Geraniums, have curious fruits, each consisting of a torpedo-shaped seed prolonged into a slender twisted rod, which terminates in a long appendage set at right angles to the axis of the remainder of the fruit. The seed is furnished with bristles pointing away from the unattached end; and the twisted tail is hygroscopic—very sensitive to moisture. Now, if the seed be held fast, and the whole moistened, the rod will untwist, and, as a result, the free end will revolve like the hand of a clock. But if, as will more likely happen in Nature, this revolution causes the long appendage to come in contact with some obstacle—a blade of grass, for instance—then the motion will be transferred to the seed-bearing end, which will revolve like an auger, and, as a result of the lengthening caused by the untwisting of the rod, the seed will be forced into the ground. The upward-pointing bristles

will come into play if the rod dries again, tending to hold the seed down in its place in spite of the contraction, and to drag down the opposite end instead; another moistening will cause the seed to burrow deeper.—*Knowledge.*

DEATH OF THOMAS MEEHAN.

The long and eventful career of Thomas Meehan was ended by his death at Germantown, Pa., November 19, at the age of 75 years. Mr. Meehan came of an old Irish family and was born near London, England, March, 31, 1826. As a boy he showed a marked fondness for botanical study and at the age of 15 published his first scientific paper. Subsequently he pursued a course of study at the famous Kew Gardens, and having decided to make horticulture and botany his life work, emigrated to America, landing in New York on his twenty-second birthday. Shortly afterward he went to Philadelphia, where the rest of his life was spent.

His sterling qualities as citizen and scientist won him many unsought honors. He was elected and continuously re-elected a member of the Philadelphia City Council for his district for a quarter of a century, and was also a member of the Board of Education for nearly as long. He has been vice-president of the Philadelphia Academy of Sciences for twenty-three years and was State Botanist of Pennsylvania under Governor Hoyt. As a member of the City Council, Mr. Meehan began a movement to secure more small parks for the city and succeeded in adding twenty-three to the number. The first of these was the famous Bartram's garden, and among the others was the garden of McMahon, an early Philadelphia horticulturist.

Mr. Meehan's contributions to science are said to number nearly a thousand titles, and his reputation as a botanist extends to the veriest novice in the science. As a writer he was clear, comprehensive and forceful, with the true literary touch so rarely attained by men of science. He was quick to see the nonsense in any preposterous proposition and was one of the staunchest advocates of a conservative course in species-making and naming.

Mr. Meehan's occupation was that of nurseryman, which business he has carried on, in conjunction with his sons, for many years near Philadelphia. He was also editor of *Meehan's Monthly*. Although a very busy man, he always found time to reply to requests for information from less fortunate botanists, and his loss will be mourned by many of us, who, though never having met him, yet look upon him as a friend.—*W. N. C.*

VITALITY OF WEED SEEDS.

An interesting light has been thrown upon the subject of vitality in weed seeds by Prof. W. J. Beal, in the *Michigan Farmer*. "In the fall of 1879," he says, "twenty-two years ago, I selected seeds of twenty-one kinds of plants, all of them common weeds except one. A considerable number of sets of these were buried in 'clean dirt,' consisting of sand from a depth of about two feet. Fifty seeds of each kind were counted out and placed in each bottle which was buried at a depth of two feet. The seeds were well mixed in each bottle with the sand referred to. At periods of five years a set has been dug up and tested. At the expiration of twenty years, *i. e.*, two years ago this fall, one set was taken out and the sand containing the seeds placed in two soup plates and gently watered. Some seeds were prompt in coming up and were removed and 'tallied' as they were identified. But there were laggards which skulked in the moist sand. I dried off the dirt for a rest from time to time, and on wetting the soil after two weeks to a month or more other seedlings appeared. The last long rest consisted of perhaps eight months, continuing until November 15, 1901. After five days three seedlings are already in sight and I am expecting others after a little more time. As I look at it, the delay of some seeds in germination is of great advantage to the weed, for, if a lot of seedlings start there may be too many to thrive well, and some will be choked and perish. Again, some of the seedlings, or all of them, may be killed by an untimely frost or by the ruthless hand of the tidy farmer and when the ground is stirred there is a reserve of seeds

to start another crop as a second planting, and still others may serve as a third or fourth planting. In case all the seeds were favorably exposed when fresh, most of them, possibly all, would germinate. After they had been buried twenty years or more a variable number of seedlings appeared of the following species: Our most common prickly pig weed, mustard, shepherd's purse, pepper grass, mayweed, common mallow, evening primrose, smartweed, purslane, narrow leaved dock, a chickweed, the blanket-leaf mullein—twelve in all out of the twenty-one species buried. If any additional lesson were needed regarding the cost of growing a crop of weeds—of permitting weeds to get a start—here it is. If the earth is once well seeded and a man begins at once to keep each weed from going to seed, he will not kill the last seedling of the old crop inside of twenty years or more."

PROPERTIES OF GERANIUM ROOTS.

Species of Crane's-bills growing in Europe and Asia have been known from remote times to possess medicinal virtues. Dioscorides mentions a plant called geranion as employed for its astringent properties, and Pliny alludes to two species which were known in his time.

The root of the Herb Robert (*Geranium Robertianum*) was formerly much used in European medicine for fever, consumption and jaundice, and externally as a resolvent. The herb is now almost entirely neglected. In many parts of the United States the root of *G. maculatum* is esteemed as one of the best indigenous astringents, and is included in the National Dispensatory. It is said to be free from the unpleasant taste and odor of the common European species of Crane's-bill.

Dr. Edward Staples in 1829 found the American drug to contain tannic and gallic acids and a red coloring matter. Messrs. Trimble and Peacock in 1891 again examined several samples of the fresh and dried rhizome and found gallotannic acid to occur to the extent of 3.2 to 6.7 per cent. in the fresh, and 9.7 to 27.8 per cent. in the absolutely dry drug. This principle is present in

largest amount in April just before the plant blooms, and rapidly decreases until it reaches a minimum in October; thus pointing to the possibility of its being a storage material to assist the plant in blooming and perfecting its seed.

The astringency of other plants of this natural order has been observed in other parts of the globe. For instance, the root of the wild Pelargonium (*Monsonia ovata*) of South Africa has attracted attention for many years, and was probably brought to the notice of the early settlers by the natives. This plant is called *Necta* or *Geita* by the Kaffirs, and being very astringent, it has been used with great success in dysentery.

The Kaffirs simply chew the root, which somewhat resembles that of the gentian, but a more palatable mixture is made by boiling four ounces of the root for twenty minutes in a pint of milk, and one or two tablespoonfuls are given every two hours. The plant is collected in January and February from the Vaal River district. Mr. J. Medley Wood, Curator of the Botanic Gardens, Durban, states that the root of *Monsonia biflora* is also used for the same purpose in Natal.—*Indian Gardening and Planting.*

NOTE AND COMMENT.

Wanted.—Short notes of interest to the general botanist are always in demand for this department. Our readers are invited to make this the place of publication for their botanical items.

Indian Pipe.—The Indian pipe (*Monotropa*) is not a specific American plant, as Mr. Ernest Waters Vickers in the November edition of the Botanist seems to think. I, myself, have collected *Monotropa hirsuta* (*M. Hypopitys L.*) in Danish forests, where also a smooth variety or species *M. glabra* exists. None of them are rare, and of both, but especially of *M. glabra*, one-flower forms (*M. uniflora L.?*) can be found. Both species are quite at home in Sweden and Norway, in the coniferous forests, of which *M. glabra* is the most common species. Nichol-

son in Dictionary of Gardening records *Hypopitys multiflora* (*M. Hypopitys*) from England, and Asa Gray in his Manual of Botany closes his description of the plant with "(Eu)."—*J. P. Pedersen.*

Sterility of Hybrids.—Scientific men are fond of throwing it up to practical people that they are behind the times; but devotees of science are often among the crowd that live in glass houses and yet throw stones. Horticulturists have long ago learned that hybrids are as fertile as their parents; and orchids, gesneriaceous plants, and many other classes furnish abundant evidence. But that hybrids are sterile, or generally sterile, is still a doctrine on which many pretty "theories" are founded by leaders in science.—*Meehan's Monthly.*

Peach Pits. Ivy Poisoning.—Whether from dearth of matter or other cause, there seems to be a tendency even in journals devoted to science to make statements that are either sensational or exaggerated. For example in the Botanist I find that it is "not safe to eat many peach pits at once." There seems to be as much qualification in this as in an "if." I am 74 and have for years eaten several peach pits (say half a dozen) two or three times a week, and have found them invaluable as a remedy for indigestion—indeed I save them for that purpose.—I observed that *Popular Science News* carefully refrained from committing itself as to whether it was the juice of the flower or the leaves (of jewel weed) that was the curative agent in ivy poisoning. The fact is that the exudation of the poison ivy is a gum that is only more widely scattered by being rubbed with *any liquid* except ammonia or spirits. Old woodmen chew some of the leaves and claim that the process exempts them. One curious fact that I have never seen referred to is that cattle are very fond of eating it and no baneful effects ensue. This I know.—*W.* [Notwithstanding what our correspondent says, it is well known that peach pits

are poisonous if eaten in large numbers. Half a dozen pits, several times a week, however, would scarcely come in this number.—Ed.]

Mankind's Craving for an Alkaloid.—The notable fact that all substances wherever found which contain the alkaloid "theine"—it is the characteristic constituent not only of tea, but also of coffee, the mate and guarana of South America and the kola of Central Africa—are highly prized by the human race, would seem to prove that this alkaloid satisfies some common craving of all sorts and colors of men. But doctors disagree as to what precisely this craving may be and as to how and why it is satisfied by the drinking of tea or coffee.—*Indian Gardening and Planting.*

Rings of Trees.—On page 68, what do you mean by "a new ring of wood is formed next to the bark, and a corresponding layer of bark adjoining it?" Rather hazy is it not? It is not true that "each ring of wood remains a faithful record of the year in which it was formed," if it is intended to convey the idea that only one ring is formed each year. Climate affects this general conclusion. In hot countries several rings are formed each year, there being no season of rest, and the climate not needing the ripening of wood which is essential, indeed, indispensable in cold and coldly temperate climates.—*W.* [The writer from whom we quoted evidently meant that the ring of wood is formed outside the old wood (next to the bark) and that a new layer of bark is formed inside the old bark (next to the wood), which is quite correct. The new growth is between the old wood and old bark, part going to form bark and part to form wood. The article was written for the Northern States, and would not, of course, be applicable to trees in hot countries.—Ed.]

EDITORIAL.

When this issue is in the mails, the AMERICAN BOTANIST will be half way through its first year, and at the end of its first volume. It gives us pleasure to state at this time that the journal in its present shape is absolutely self-supporting. It is a rare thing for a botanical journal ever to be able to get along without assistance from some botanical club or other, and we look upon our success in this instance as an indication that the journal has been cast upon proper lines for the flower lover. If we thought, however, that it would always remain at its present size, we would promptly give up in disgust the task of publishing it. We want a larger magazine and we intend to have it. But it is our design to build slowly and safely. Just as fast as our circulation increases the number of pages will increase. As an example of our policy, we cannot do better than to refer to our other journal, *The Fern Bulletin*, which was begun as an eight page publication, but which has increased with succeeding years until every issue now contains thirty-two pages. We are making every effort to advance the circulation of the AMERICAN BOTANIST, and expect soon to add another four pages to each issue, without extra cost to our readers. If those who know of the journal will only recommend it to their friends, our first increase will come with the next number. As with all new journals, a large number of people have asked for sample copies without subsequently subscribing. But this does not make us uncomfortable; we expect to add them to our list later! There are always many who wait to see whether a journal is going to succeed or not before subscribing, and they are the ones who pay advanced prices for early volumes, just as they are doing to-day in the cases of *The Forester*, *Rhodora* and *The Fern Bulletin*. There are also other people who reason with the editor of a certain botanical journal that a dollar is too much to ask for a 16-page journal. But we reply, where else can you get as much of this kind of botanical lore for the same money? Besides, this is not going to stay a 16-page journal! We thought we started

with a sufficient number of copies in reserve; but there are now less than 300 copies of the first volume on hand, and those who think of purchasing should do so at once.

BOOKS AND WRITERS.

—Since the publication of the "Illustrated Flora," by Britton & Brown, Dr. Britton has been at work upon a manual covering the Northern States and Canada, which should embody in a single volume all the essential features of the larger work except the illustrations. This has now appeared from the press of Henry Holt & Co., and is entitled "A Manual of the Flora of the North Eastern States and Canada." It is a very creditable example of book making, and although containing nearly a thousand more descriptions than the 6th edition of "Gray's Manual," is a somewhat smaller volume. To one who has no personal interest in the matter the book contains much to praise, as well as much to condemn. It is the first manual of our flora to be arranged according to the Engler-Prantl sequence of orders and of special value on this account. The greatest interest in this work, however, centers in the author's use of nomenclature and in his treatment of genera and species. One who turns from the well known "Gray's Manual" to its new rival will be met not only by a bewildering array of new scientific names, but by an equally perplexing number of "new species" or sub-species. Frequently, but not frequently enough, the descriptions of the latter are followed by the significant phrase, "probably a mere form." Nevertheless each is dignified by a trinomial in sounding Latin or Greek and backed up by a double citation of authorities. As an example of the changes in names we may take the order Orchidaceae. In "Gray's Manual" this contains seventeen families; in Britton's the number has grown to twenty-six, the additional families involving a change of names in no less than twenty-three species out of a total of fifty-two in the first named work. Moreover, the "Illustrated Flora," published in 1896, contained six generic names that differed from those in "Gray's Manual," while the

new work contains ten more that did not appear in the "Illustrated Flora." The Orchidaceae, it may be noted, is only one of a large number making up our flora. Truly the botanist who can follow a system that permits so many changes in five years, must be easily satisfied! So long as species-making is governed by individual fancy and based upon no sound fundamental principles, we may expect many new species based upon such trival characteristics as color, size or varying degrees of pubescence. It is no surprise to see certain genera, in which the scientists have been most industrious, greatly increased in size. Thus in "Gray's Manual" *Rubus* has 11 species; in Britton's work 29. *Viola* has 19 species in the one and 43 in the other. *Panicum* has 25 species in Gray's volume, but the body of Britton's work contains 52, and the appendix brings the number up to 62 without exhausting the list of species described from the Eastern States by the gentleman who collaborated with the author in this part of the work. The difficult genus *Aster* was a favorite study of Dr. Gray's and he catalogues 54 species and 11 varieties. The new volume, however, has 78 species and 59 varieties! There is a suspicion among many excellent botanists that a large number are mere forms, too insignificant to be worth distinguishing by a scientific name. The reprehensible practice of making an "English" name for each plant that lacked one, has been followed, with the result that we are treated to such combinations as Circinate White Water Crowfoot, Short-haired Reed-Grass, Farwell's cat's-foot, Judge Daly's sunflower, Addison Brown's thorn, Stewardson Brown's Indian turnip, besides other names certainly neither English nor common, as Schedonnardus, Aphanostrephus, Amphiachrysis, and Tetragonotheca. Notwithstanding the defects here indicated, rather because of them, the book will be invaluable to botanists generally. It should be in every library that has a "Gray's Manual" upon its shelves. The price is $2.25.

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AN EXPERT OPINION.

Turning away from the flying and creeping things of the earth and from the snap-shot methods necessary to portray their life, a feeling of coolness and repose comes to us from between the leaves of "Our Ferns in their Haunts." Last week, driving on the Parkman road, near the head of Lake George, we watered the horse at a barrel, fed from a spring on the hillside by the hollowed-out half of a tree-trunk. We climbed the slope above it and gathered quantities of ferns, differing, while the horse jogged on again, as to whether this or the florist's delicate pet was the real "maidenhair." There was no untechnical book in our collection, nor did we know of any in which we could "look it up." The next mail brought this book. It opened to a pen-and-ink sketch of what looked like our drinking place. Further on in the book we found—was it the very clump from which our ferns had been taken? It might have been, for the surroundings seemed identical. Our questions were answered, as were several others, and we were given a digestible morsel of science with a salad of maidenhair folk-lore, all served up in the best of descriptive English. The make up of the book is admirable. The colored plates, wash drawings and pen-and-ink sketches are artistic and at the same time accurate in detail, and the bits of quoted verse and folk-lore are as attractive as the illustrations.—*Literary Collector.*

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